SUBJECT INDEX

This Index replaces the former Quick Reference Key Word Index. This Index provides sub topic listings for the larger categories . For example, generating functions has about 100 sub-listings.

Entries are listed by volume and issue number (page number) using the format **vol #.issue #(page #)** and the page reference is indicated by the **beginning** of the article in which the topic appears. Some topics have several sub categories and can be found under the specific heading. For example, most things relating to Pell such as equations, identities or polynomials are listed under Pell, not under equations, identities or polynomials, respectively. But in some cases appear under other specific headings.

Since the topic "Fibonacci" has an immense number of entries, it seemed prudent to segregate Fibonacci topics. Similarly for Lucas topics. So for the letter "F" all non-Fibonacci topic listings appear first, followed by listings "Fibonacci-A", etc. Similarly for the letter "L" and "Lucas-A", etc. Other topics are listed in a natural way.

Note that this Index is intended to be as complete as possible. However there are bound to be sins of omission, some intentional, some not. If you use this Index and are unable to find something, please inform the indexer at <charliecook29150@aim.com> so that any missing topic will be available in the next version submitted to the Fibonacci Home Page. Note that some duplication of entries exists.

Year references for each volume are as follows with the number of issues published for each volume number in parentheses.

Vol:	1: 1963 (4)	Vol	2: 1964 (4)	Vol	3: 1965 (4)
	4: 1966 (4)		5: 1967 (5)		6: 1968 (6)
	7: 1969 (5)		8: 1970 (5)		9: 1971 (5)
	10: 1972 (6)		11: 1973 (5)		12: 1974 (4)
	13: 1975 (4)		14: 1976 (5)		15: 1977 (4)
	16: 1978 (6)		17: 1979 (4)		18: 1980 (4)
	19: 1981 (5)		20: 1982 (4)		21: 1983 (4)
	22: 1984 (4)		23: 1985 (4)		24: 1986 (4)
	25: 1987 (4)		26: 1988 (4)		27: 1989 (5)
	28: 1990 (4)		29: 1991 (4)		30: 1992 (4)
	31: 1993 (4)		32: 1994 (5)		33: 1995 (5)
	34: 1996 (5)		35: 1997 (4)		36: 1998 (5)
	37: 1999 (4)		38: 2000 (5)		39: 2001 (5)
	40: 2002 (5)		41: 2003 (5)		42: 2004 (4)
	43: 2005 (4)		44: 2006 (4)		45: 2007 (1)
	46/47: 2008/9 (4)		48: 2010 (4)		49: 2011 (4)
	50: 2012 (4)		51: 2013 (4)		52: 2014 (4)
	53: 2015 (4)		54: 2016 (4)		

MRFS: 18th Anniversary Collection of Manuscripts Related to the Fibonacci Sequence (1980)

PI 1984 International Conference Proceedings (1986)

PII 1986 International Conference Proceedings (1988)

PIII 1988 International Conference Proceedings (1990)

PIV 1990 International Conference Proceedings (1991)

SUBJECT INDEX

PV	1992 International Conference Proceedings (1993)
PVI	1994 International Conference Proceedings (1996)
PVII	1996 International Conference Proceedings (1998)
PVIII	1998 International Conference Proceedings (1999)
PIX	2002 International Conference Proceedings (2004)*
PXI	2004 International Conference Proceedings (2009)
PXII	2006 International Conference Proceedings (2010)
PXIII	2008 International Conference Proceedings (2010)
PXIV	2010 International Conference Proceedings (2011)
PXV	2012 International Conference Proceedings (2013)
PXVI	2014 International Conference Proceedings (2014)

* No Proceedings were printed for the 2000 International Conference. So PIX refers to the 10th International Conference, etc.

****

A

ABC-conjecture 45.4(362)
abstract algebra PVII(353)
Aitken acceleration of a convergent sequence 39.1(22) 45.4(313)
algorithms
- bottom-up 34.2(156)
- cascaded combinations PV(207)
- computing Fibonacci numbers PXII(161)
- division (see under divisibility topics)
- E 42.2(98) 42.4(341)
- ϵ-algorithm 39.1(22)
- Escott's 36.2(146)
- Euclidean (see under Euclidean algorithm)
- generating fractals PIX(43)
- golden number division 46/47.3(241) PVII(463)
- golden ratio division 46/47.3(249)
- greedy 48.2(150)
- Jacobi 50.3(252) MRFS(16)
- J-K strings PXII(115)
- Lemoine-Kátai PIII(287)
- probabilistic for trees 27.3(201)
- seating arrangements PXII(203)
- subtractive Euclidean 30.1(80) 39.4(320)
- Sylvester PVIII(155)
- third order recurrence relations 34.5(447)
- Zeckendorf 39.3(250) 51.3(249)

alioquot cycles 45.4(327)
alpha expansions 48.2(150)
α -inequality 40.4(295)
α -words 41.3(194)

SUBJECT INDEX

A

alphabets
- automata PXIII(237)
- binary words PXI(67)
- cyclic strings 35.3(240)
- seating PXII(203)

analytic continuation 39.5(409)
applications and models
- architecture
  - Egyptian 17.4(340)
  - human body PVII(393)
  - Minoan 6.6(370)
- art
  - Christmas tree 23.4(369)
  - golden section 14.5(406)
  - Mosaic 8.3(281)
  - op 3.4(330)
  - rabbits 16.5(426)
- automata PXIII(237)
- calendar 32.5(416)
- color science PIX(39)
- computer science
  - golden topics PV(1)
  - integer equations PVII(93)
  - Lamé's theorem 27.4(290)
  - memory allocation 14.1(37) 14.3(233)
  - pixels PVI(1) PVIII(337)
  - random number generators PIV(1)
  - stability PVII(49)
  - strings PXIV(217)
  - symbolic calculators PVIII(165)
  - Zeckendorf representations 33.1(74)
- control theory 10.6(561)
- cryptography
  - General 34.3(280)
  - Prime numbers PVIII(259)
  - public key 41.3(279)
  - Spiral generated sequences 12.4(393)
- current events 10.4(446)
- dynamical systems
  - differential operators PVII(353)
  - golden numbers PVII(463)
  - Möbius transformations 35.3(258)
- economics 2.4(320) 3.4(309) 35.4(309)
- education and Pythagorean triples 31.1(21)
- engineering
  - communication 22.3(208) 35.1(32) 41.3(279)

SUBJECT INDEX

A

applications and models
- electrical 20.3(245) 28.2(102) 35.2(149) PI(141) PIV(189)
- general 21.2(97)
- Water pollution 10.3(299)

flow patterns 2.4(310) 10.6(643)
information science (and)
- Morse code PV(113,481)
- numeration sequences PVII(77)
- retrival 11.5(495)
- Subwords 33.2(139)

logic MRFS(22)
music (and)
- cyclic numbers PXV(235)
- golden ratio PXIII(127)
- pga-sequences PVIII(61)
- pixels PVIII(337)
- Proportion
  - Bach 2.3(219)
  - Bartok 9.5(527)
  - composers 10.3(319)
  - Nϕrgård 14.2(126)
- western 16.6(513)
- Zeckendorf representaion PXIV(199)

political Science 19.3(233)
rhythms 43.3(262)
science
- astronomy (and)
  - Bode 14.2(129) 16.6(530) 17.2(116)
  - golden mean 22.1(70) PVII(393)
  - Planets 8.4(428) 14.2(129) 15.1(17) 17.2(116)
  - radio 19.2(153)
- biology
  - algae 7.5(449)
  - genealogy 1.1(53)
  - insects 16.4(315)
  - physiology
    - cancer 10.3(262) 32.3(253)
    - cells PVII(377)
    - medicine 34.3(257) MRFS(210) PIII(299) PV(497)
    - nerve 14.4(377)
- botony
  - phyllotaxis 1.4(57) 3.1(64) 24.4(309) 27.1(18) PXIII(257)
  - Pineapples 8.5(507)
  - plants 9.3(253) 14.2(97) 16.4(315) 24.4(309) 34.2(129)
  - trees 6.1(69) 7.5(525) 9.3(237)

SUBJECT INDEX

A

applications and models
- science
  - chemistry
    - Balmer series 11.5(526)
    - golden ratio 1.4(61) 5.2(193) 6.4(244) 9.1(82)
    - graphs 43.3(269) PI(1)
    - hexagon chains 28.1(81) 29.1(7) 43.3(269) PI(1)
    - Pascal's triangle 6.2(192)
    - periodic table 9.1(82) 15.2(173)
    - polymers 27.4(372) 35.1(75)
    - topology 11.3(255)
  - physics
    - automation theory 48.1(68)
    - diffusion PXIII(337)
    - electricity 1.1(53) 14.1(25) 17.3(239) 27.3(267) PIII(223)
    - filters 20.1(1)
    - fission 3.3(208)
    - fluid mechanics16.2(171)
    - geology 15.4(370)
    - networks 3.2(139) 9.2(188) 11.4(420) 12.2(147) 13.4(315) 30.1(62) 31.3(227) 32.2(124) 34.2(129) 37.4(350) 38.1(8)
    - optics 1.1(53) 10.6(659) 11.3(285,302) 17.2(118) 24.3(268) 27.3(221) 28.4(334) 36.1(76) PV(379)
    - particle dynamics 3.2(131) 17.1(37) 21.3(196)
    - thermodynamics 17.3(239) 24.3(247)
- sociology 6.2(151)
- statistics (and)
  - Bayesian decisions MRFS(137)
  - density 36.3(263)
  - Eulerian numbers 20.2(132: listed on the cover as 135)
  - lotery tickets 29.4(367)
  - Martingale differences PI(99)
  - standard deviation 51.4(326)

approximation topics
- irrational numbers 34.1(18)
- difference equations 41.2(133)
- Diophantine 35.1(29)
- Durrmeyer polynomials PIX(9)
- Euler's constant 49.3(243)
- Halley's method 49.3(255)
- Heron's method 45.1(35)
- Householder's method 49.3(255)
- lattice points PVII(265)
- number of partitions of n 52.1(10)
- numeration systems 35.2(172)
- Newton's method 39.4(336) 49.3(255)

SUBJECT INDEX

A

approximation topics
- quadrature PVII(239)
- secant method 49.3(255)
- zeroes of polynomials 42.1(55) 42.2(98)

arrays (tables and)
- binomial coefficients 11.5(449) PIX(187)
- Catalan 27.1(33) 40.4(299)
- Césaro identity 18.3(259)
- composition 20.2(122) 22.2(146)
- convolution
  - Catalan 15.1(30)
  - general 13.3(193)
  - Gould natural number 15.1(67)
- DFF & DFFz PV(199)
- diatomic PXVI/52.5(168)
- differential equations 25.4(352)
- enumeration of 10.5(489)
- Eratostenes 6.4(261)
- extended Zeckendorf PXVI/52.5(15)
- Frankel 45.4(304)
- golden number 10.1(43)
- greatest common divisor 7.4(337)
- greatest integeer 10.1(43)
- Gupta 35.1(32)
- Haukkanen 35.1(32)
- Hosoya triangle
- lengths of certain subseqences 34.2(152)
- Mann-Shanks series PVII(377)
- multinomial coefficients 11.2(131)
- number of disease carriers 34.3(257)
- Pascal-like triangles 10.4(355) 14.1(30) 23.1(7) PI(9,229) PV(229,507)
- Pell polynomials 23.1(7)
- Piza 27.4(362)
- “R” 10.1(1)
- Riordan 40.3(247)
- Stern diatomic 41.2(169)
- Stolarsky 15.3(224) 19.2(117) 29.4(339) 32.4(301) 50.2(106) MRFS(134) PV(405) PXV(175)
- Tartaglia PI(9)
- trees 28.1(48) PVII(377)
- triangular 5.3(235) 8.3(235) 10.6(591) 19.3(276) 31.4(290) 42.1(70) MRFS(38) MRFS(169) PI(9) PII(61) PVII(415)
- two-line 11.2(113) 12.3(266)
- Vieta polynomials 40.3(223)
- Vieta-Lucas polyomials 40.3(223)
- Wythoff numbers 23.4(308) 32.4(301) 33.1(3) 45.4(304) MRFS(134) PVIII(53) PXV(175)
- Zeckendorf 33.1(3) 49.4(303) 50.1(11) PVIII(53) PXIII(161) PXIV(79)

SUBJECT INDEX

A

asymptotic topics (and)
- Apéry numbers 50.2(129)
- binomial coefficients 51.2(163)
- delay recurrences PXIV(43)
- Ducci sequences 45.2(155)
- Euler function 49.2(102)
- exponential generating functions 41.4(360)
- exponentiation 49.4(340)
- Lehmer numbers 41.2(122)
- Mersenne numbers 49.2(102)
- Niven numbers 41.5(431)
- residues 44.1(46)
- sums of digits 36.1(72) 51.4(319)
- t-core partitions PIX(201)
- Zeckendorf representations PXII(317) PXIII(161)

B

Bailey-Borwein-Ploufe formulas 52.4(357)
Baillie-PSW pseudoprimes 41.4(334)
Barrucand's conjecture 39.4(358)
BBP-formulas 52.2(129) 52.4(357)
Benford
- distribution PXIV(25)
- frequencies PXV(63)
- law 36.4(305) 49.2(134)
- law and density PXVI/52.5(35)

Bergum, Gerald E. 36.4(372)
Beta expansions 36.5(396,457) 37.1(21)
Binet formulas (and, for) (Also see under specific numbers)
- c-nomial coefficients PXIV(139)
- congruences 50.3(246)
- factorial formula 42.4(320)
- general 49.4(355)
- generalized 15.1(21) 51.1(13)
- generalized
  - Pell numbers 31.2(166)
  - Pell-Lucas 31.2(166)
  - line sequences PVIII(233) PIX(145)
- gibonacci polynomials 53.3(241)
- Numbers
  - Perrin/Padovan PXIV(69)
- Pell diagonal functions PIII(255)
- polynomials
  - Asveld polynomials PII(163)
  - Brahmagupta polynomials 34.1(30) 36.1(34)
- quaternions 19.5(410)

SUBJECT INDEX

B

Binet formulas (and, for) (Also see under specific numbers)
- recurrence relations
  - kangaroo 51.1(13)
  - nth order 22.4(327) PXII(225)
  - second order 26.1(3) 35.1(24)
  - third order 34.5(447)
- Whitford generalization MRFS(93)

binomial
- coefficients (and)
  - Bracket functions 2.4(241)
  - Catalan numbers 50.1(62)
  - Chebyshev polynomials 23.2(166)
  - C-nomial XIV(139)
  - compositions 2.4(241)
  - congruence 29.2(114) 30.2(121) 31.1(73) 32.1(60)
  - convolution formulas 40.1(19)
  - cumulative connection constants 38.2(157)
  - determinants 11.5(469)
  - Diophantus property 34.2(164)
  - divisibility 29.2(114) 33.5(386) 38.3(194) MRFS(57) MRFS(98) MRFS(189)
  - equations PII(1)
  - extended 54.2(125)
  - fractals PV(221)
  - generalized {the notation is due to Fontené-Ward-Jarden-Torento-Fuchs: see Gould 7.1(23)} for a history of credit for the now-accepted notation.)
    - Fontené-et al (and)
      - bracket functions 7.1(23)
      - divisibility 12.2(157) 33.5(386) 38.3(194) PVIII(1)
      - gcd PVI(297)
      - identities 2.4(296)
      - Kummer's theorem 36.3(194) PVII(133)
      - matrices 3.2(91)
      - Pascal's triangle 9.4(337)
      - Stirling numbers 9.1(51)
      - trig functions PV(507)
    - Gaussian q- (and)
      - bracket functions 5.5(401) 7.1(23)
      - Filbert matrix 48.1(29)
      - Mod 31.1(53)
      - polynomial coefficients
        - Gauss 26.1(64) 41.3(263) 42.1(3) PVI(291)
      - product functions PXII(285)
      - recurrence 12.2(129)
    - miscellaneous (and)
      - extensions 43.2(124) PIX(187)
      - Kummer's theorem PIV(109)
      - partitions 12.4(360)

SUBJECT INDEX
B

binomial
- coefficients (and)
  - generalized
    - miscellaneous (and)
      - residues 38.3(227) 44.1(46)
  - greatest common divisor 10.6(579) 11.1(25) 11.3(282) 13.1(70)33.5(386) PIII(15) PV(11) PVII(23)
  - identities 4.4(323) 10.4(381) 11.3(225) 12.3(300) 12.4(339,369) 17.2(108) 20.3(249) 24.3(263) 25.4(339) 28.3(252) 34.3(280) 37.3(233) 42.4(290) 43.1(31) 43.2(142) 46/47.1(48) 48.2(161) 48.4(290) 49.1(10) 49.2(99,139) PV(169) PIX(19,177,187) PXII(57) PXIII(321) 54.2(125)
  - lattice points 2.4(241)
  - least common multiple 24.4(310)33.5(386) PIII(15) PV(11)
  - linear recurrence relations
    - general 40.5(417)
    - 2nd order 40.1(9)
    - nth order 23.4(359)
  - Lucanomials 32.2(111)
  - matrix of 3.2(81) 38.2(123) 39.3(268)
  - Möbius function 2.4(241)
  - modulo
    - 2 32.2(111) 42.1(38)
    - 3 36.3(272) MRFS(38)
    - 4 31.1(53)
    - M 27.4(348)
    - p 31.1(53) 32.1(60) 33.4(290) 38.3(227) 42.1(70) 44.1(46) 51.2(142)
  - parity 19.1(61)
  - Pascal triangles 11.5(469) 23.4(356) 38.3(194) PIV(219) PV(11) PVII(23) PXII(35)
  - Pell numbers 34.2(164)
  - Pell polynomials 34.2(164)
  - prime factors of 14.4(348)
  - products of 9.2(120) 11.5(449) 12.1(45) 12.1(71) 51.2(163)
  - Pythagorean triples 40.1(76)
  - *q*- PXVI/52.5(117)
  - quotients 38.4(317)
  - residues 32.1(60) 38.3(227)
  - Stirling numbers 31.3(256)
  - sums 14.1(75) 14.3(249) 20.3(249) 31.4(346) 43.1(31) 46/47.1(48) 53.4(319) PVII(185) PIX(19) PXI(251) PXII(35,57) PXVI/52.5(124) 54.1(44) 54.2(125) 54.3(204,253)
  - sums of inverses 19.5(433) 35.4(342) 38.1(79)
- distribution 29.4(322)
- expansions 14.3(203) 14.5(392) 15.1(22) PII(89) 37.1(3)
- inversion formula 39.4(324) 48.3(241,276)

SUBJECT INDEX

B

binomial
- sums
  - and the golden number 53.1(42)
  - for nth order golden numbers 52.4(307)
  - of sequences of numbers 31.1(28)
- theorem 37.1(3)

bounds for linear recurrences PXI(59)
bracelets 48.1(62) PXII(11,169) PXIII(153)
Bruckman-Rabinowitz theorem 41.1(80)
Bruckman sum 40.2(175)

C

Cantor sets 39.3(238)
Carmichael exponent PXI(173)
Carlitz tuples 26.3(224) 27.2(131)
Cauchy binomial theorem 49.4(320)
cell occupancy 45.4(347)
Chinese remainder theorem P.IV(241)
coin tossing topics 49.3(249) 50.2(140)
Collatz
- conjecture 44.3(194) 49.2(131) 53.2(168)
- problem 40.1(43)

coloring of a set 53.1(53)
combinatorics (and)
- bi-colored graphs 5.3(247)
- binary
  - linear sequences 29.3(249)
  - words 19.4(297)
- binomial coefficient identities 46/47.3(245) 49.2(99)
- circular 28.1(28)
- cubic fields MRFS(132)
- determinants 51.1(63)
- digit manipulation 33.1(26)
- Eulerian numbers 37.2(154)
- Euler's generating function 23.4(347)
- function technique 22.1(29)
- compositions 9.3(225) 14.5(439)
- combinations
  - cascaded PV(207)
  - duals 9.5(505)
  - sums 14.3(265)
- golden ratio 46/47.3(249)
- identities
  - combination 11.5(480) 12.2(186) 16.4(354) MRFS(132)
  - Zeckendorf 46/47.3(249)
- Markov models 38.2(145)
- negative binomial distribution 27.3(209)

SUBJECT INDEX
C

combinatorics (and)
- number systems 14.2(101)
- numbers
  - Bernoulli 14.2(101)
  - Euler numbers 14.2(101)
  - Stirling 44.2(131)
- periodic topics 26.1(70)
- permutations
  - cascaded PV(207)
- polymers 27.4(372)
- polynomials
  - Euler 14.2(101)
  - Laguerre 20.4(334)
- probability 38.2(145)
- problem of Terquem 5.1(59) PXIII(45)
- recurrence relations 16.3(227)
- sequences
  - Chebyshev 26.1(70)
  - integer 27.4(372)
- thermodynamics 24.3(247)
- 3rd order recurrence sequences 16.1(11)
- tiling 49.4(290) PXI(257)
- wheel graphs 51.3(259)

compositions (and)
- classes of PXV(193)
- combinatorics9.3(225) 14.5(439)
- cyclic 48.3(249)
- determinants 51.1(63)
- generating functions 14.3(254) 20.2(132) PXVI/52.5(201)
- golden rule 17.4(306)
- identities 16.1(23)
- lattice
  - function 22.1(42)
  - paths 5.3(223) 39.5(430)
- MacMahon graphs 49.4(348) PXV(193)
- multipartite 17.3(220)
- n-color 50.4(297) 51.2(130)
- number of 2.4(241) 41.3(229) 43.3(227) 45.2(104) 51.2(130) PXI(141)
- ones and twos 13.3(233) 17.4(321)
- palindromic 13.4(350) 50.4(360)
- recurrence relations 15.3(239) PXVI/52.5(201)
- restricted 13.3(233) 17.4(321) 39.5(430) 50.4(360)
- Riemann zeta function 2.4(241)
- sums 2.4(241) 20.2(132) PIX(213)
- words PXI(141)

SUBJECT INDEX
C

congruence topics
- Bernoulli numbers
  - higher order 46/47.1(26)
  - mod m^n 30.4(349)
  - mod p 40.4(345)
  - mod p^n 36.3(276) 38.4(339) 46/47.3(225) 52.2(160)
  - polynomials 30.4(349)
- binomial coefficients
  - identities 27.2(116)
  - mod p 32.1(60) 36.3(194)
  - mod p^n 30.2(121) 51.2(142)
  - mod 2 42.1(38)
- Carlitz 4-tuples 26.3(224)
- Catalan numbers PXIV(191)
- Chinese remainder theorem PIV(241)
- equations
  - cubic mod p 9.5(525)
  - integer mod n PVIII(293) PXI(39)
  - linear mod n PV(85)
  - nth degree mod m 20.2(129) 22.4(358) 48.3(202)
  - Pell 51.2(98)
  - quadratic equations mod n 11.2(161)
  - quadratic equations mod p PV(85)
  - systems of linear equations 53.1(53)
- Euler's
  - mod m 46/47.3(225)
  - mod p^n 46/47.3(225) 52.2(160)
  - numbers 30.4(349) 42.2(128) 43.2(132) 53.4(319)
  - polynomials 30.4(349) 42.2(128)
  - theorem 30.4(349)
  - totient 28.3(273)
- integers mod p^n 14.1(23)
- Kummer's 30.4(349)
- least exponents 27.3(259)
- Niven numbers 31.2(146)
- Nörland numbers PV(355) PXIII(77)
- *p*-adic 32.1(2) PIX(1) PXIV(191)
- P_t sets 27.3(287)
- Pell mod 7 & 17 50.3(246)
- Pell mod p 40.4(345)
- Pellian sequences 25.3(216)
- polynomials
  - Bernoulli 39.1(50)
  - derivatives PVI(105)
  - Euler 39.1(50)
  - miscellaneous 5.5(401)
  - modified Dickson 40.1(33)

SUBJECT INDEX
C

congruence topics
- prime powers mod p 40.4(345)
- products of integers 33.3(258)
- pseudo primes PIV(277) PXI(191)
- Pythagorean triples: various mods 14.2(180)
- quadratic mod p 51.2(98)
- Ramanujan numbers 27.1(61)
- recurrence sequences
  - binary 32.1(2)
  - lacunary 41.1(41)
  - linear mod 10 PVIII(141)
  - n^{th} order 27.1(25) 45.1(10)
  - 2nd order 24.4(332) 27.1(25) 32.5(424) PIII(311) PVIII(213)
- Sierpinski numbers 33.3(206)
- Stirling numbers 28.4(355) 31.1(73) 36.3(252) 39.5(444) PIII(161) PV(355)
- sums of reciprocals of powers of integers 53.2(98)
- 3x + 1 problem mod 3^k 46/47.2(115)
- uniformly distributed sequences mod m 15.3(209) 15.3(265)

continued
- exponentiation (tower) 18.4(341) 19.4(326) 20.1(7) 23.2(146) 26.2(178) 29.4(351) 29.1(37)
- fractions (and)
  - approximations
    - Diophantine 37.4(350) 38.1(25) 44.4(297)
    - Newton 37.2(178) 39.4(336)
    - real numbers 36.4(290)
  - basics 2.2(145)
  - Bessel functions 46/47.4(316)
  - bifurcating 50.3(252)
  - braids PIV(257)
  - convergents 25.2(171) 33.3(222) 36.2(171) 37.2(178) 39.4(365) 43.4(328) 44.4(290) 44.4(297) 45.4(357) 46/47.3(268) 48.4(348) 49.3(255) 49.4(330) PIV(257) PXII(265,187) PXIV(97)
  - coprime integers PV(185)
  - Diophantine equations 13.4(309)
  - elements all ones 14.1(18)
  - Euclidean algorithm 30.1(80) 38.2(136) 41.4(310) PIII(217)
  - Gauss map 43.3(243)
  - golden ratio (mean) 5.2(113) 23.2(155) 27.1(18) 31.1(7) 31.4(338) 37.2(178) PV(1) PXII(269)
  - higher dimension PV(1) PVI(1)
  - Hurwitz's theorem 27.5(420)
  - identities 11.5(533) 44.3(274)
  - in fields PXVI/52.5(193)
  - Jacobi's algorithm 50.3(252)
  - ladder networks 37.4(350)

continued
fractions (and)
leap years 32.5(416)
leaping convergents PXII(187)
logarithms 37.3(198)
Mandelbrot iteration 31.3(263)
matrices 15.2(123)
mendicants 16.6(527)
moment generating functions PXIII(187)
moments 49.1(76)
multi-Set ⌊nα⌋ 44.3(274) 44.4(290)
n^{th} roots 35.4(341)
Newton's method 31.3(263)
Nim-type game 41.4(310)
non-regular 46/47.3(268)
number theoretic function 38.2(136)
numbers
congruent 49.4(330) 50.3(222)
irrational 34.3(200) 36.2(146) 38.1(25) 39.1(66) 39.4(365) 48.2(129) 49.3(255) PXIV(97)
Pell 43.4(328)
random 49.1(76)
rational PV(569) PVII(201)
palindromes 36.2(171) 39.1(66)
Pell's equation 48.4(348)
periodic topics 15.3(225) 29.3(220) 29.4(298) 33.3(222) 33.4(311) 41.2(169) 42.2(161,170) 45.4(357) 48.1(47) 48.2(129) 49.1(66) 49.3(255) PVI(1) PVII(201)
permanents 13.2(150)
π 2.4(290) 7.3(275)
Pierce expansions 24.1(22) 31.3(263) 32.5(416) 36.2(146) 37.3(198)
polynomials
miscellaneous 37.4(350)
orthogonal PIII(217)
probability 33.2(164) 49.1(76)
Pythagorean triples 30.2(144) PIV(247)
quadratic surds 5.2(113) 8.2(135) 9.4(427) 19.2(163)
Qx + 1 problem 19.3(285) 19.4(293)
rabbits 15.4(311)
rank of apparition PXII(141)
recurrence reltions 45.4(357)
square roots 24.1(41) 25.3(216) 27.5(424) 34.3(200) 36.2(146) 36.4(290) 38.5(446) 42.2(170) 45.4(357) PXII(269)
three gap theorem 27.1(18) 28.3(204)
trees PIV(257) PV(569)
radicals 31.4(354)
subscripts 9.1(35) 22.1(1)

SUBJECT INDEX
C

convergence topics
- basics 2.1(39) 2.1(59)
- exponentiation (towers) 18.4 341) 19.4(326) 20.1(7) 23.2(106) 23.2(146)
- golden sums 52.4(307)
- multiplicative functions sums 15.2(164)
- power series coefficients 7.1(41) 11.1(15)
- sequences
  - integer 18.3(231)
  - linear recurrence MRFS(223)
  - miscellaneous 17.3(193)
  - ratios PV(547)
  - uniformly distributed PV(561)
- sine-Catalan number series 52.3(236)

convolution topics (involving)
- arithmetic functions 38.5(440)
- basics 8.2(158) 11.5(511) 44.1(13)
- Bell polynomials PXVI/52.5(54)
- binomial coefficients 28.3(215) 40.1(19)
- Catalan number sequence 40.4(299) PXVI/52.5(54)
- Chebyshev number sequence 43.2(108)
- Fuss-Catalan numbers PXVI/52.5(54)
- H-transform 13.4(357)
- hockey stick identity 44.1(13)
- matrix generating functions PIX(289)
- Motzkin numbers PXVI/52.5(54)
- multinomial coefficients 11.2(131) 11.5(469)
- Pell number sequence 41.4(352) 43.2(108) 43.2(108)
- polynomials
  - Chebyshev 43.2(108)
  - lambda 40.5(405)
  - Morgan-Voyce 38.5(451) 40.2(98)
  - Pell 38.5(451)
  - Pell-Lucas 38.5(451)
  - Vieta-Lucas 41.3(240)
- tile sequences PXII(11)
- triangles (and or square arrays for)
  - Catalan sequence 14.2(135) 14.5(395) 15.1(30) 38.5(408) 40.2(136)
  - Chebyshev numbers 43.2(108)
  - miscellaneous sequences 11.2(131) 11.5(469) 14.2(135) 14.5(395) 15.1(30) 40.2(136) 42.3(205) PIX(289)
  - Pascal's 44.1(13)
  - Pell 38.5(451)
  - Pell-Lucas 38.5(451)
- trinomial coefficients PXIII(109)
- Vandermonde-type 5.3(223) 40.1(19)

counting topics (See under enumeration)

SUBJECT INDEX

C

covering of integers 52.2(148)
cross ratio 37.3(252) PIX(235)
cycles: spanning subgraphs 52.1(46)
cyclotomic pseudoprimes PXII(239)
cryptography
    and recurrence relations 53.1(24)
    miscellaneous topics 44.3(224) 53.1(24)
    public key 53.1(24)
cubature 19.4(313) 21.2(129)
Curling Number Conjecture PXV(219)
cyclic topics 49.1(34) 49.2(131) 51.2(137) 53.2(168)

D

decompositions: Greedy-6 54.4(348)
decompositions: FQ-legal 54.4(348)
density (and)
    arithmetic
        functions 16.4(318) 16.5(428) 16.6(481)
        progressions11.2(145)
    asymptotic and
        geometric sequences 16.2(152)
        integers 17.4(289)
        primitive roots 20.2(112)
        probability 7.5(474)
    Chebotarev theorem 44.4(326)
    combinatorial logic problem 14.1(64)
    k-integers 7.2(140)
    Lehmer sequences 41.2(122)
    logarithmic 16.2(152) 19.2(121)
    natural in real number sets 24.1(2)
    primes dividing torsion sequences 45.1(56)
    Pythagorean triples 30.4(335)
    Schnirelmann 27.4(366)
determinants (and, from)
    basics 1.1(65)
    binomial coefficients
        circulants 18.1(9)
        generalized 9.2(113)
    Catalan numbers PXII(27)
    Cayley-Menger PVII(153)
    circulants
        cyclotomous integers 24.1(47)
        integers MRFS(212)
        skew 24.2(176) 26.2(172)
    continuants 8.5(449) 10.6(585)
    factorable 14.2(171)
    GCD matrices 30.2(157)

SUBJECT INDEX
D

determinants (and, from)
- Hankel 46/47.2(167)
- hypersurfaces in *n*-dimensional Euclidean space 24.3(227)
- identities 24.3(227)
- Lamda functions 5.4(370)
- 1979 MRFS(89)
- Pascal's triangle 2.2(93) 11.2(131) 11.5(469,511) 16.4(296)
- permanent functions 7.5(539)
- permutations 29.2(160)
- powers of
  - Fibonacci numbers 54.2(137)
  - Lucas numbers 54.2(137)
  - quadratic polynomials 27.3(253)
  - 2nd order sequences 4.2(179)
- products of recurrence sequences 8.4(350)
- q-determinants 29.2(160)
- recurrence sequences 29.4(304) 51.3(268)
- Smith's determinant 25.4(343)
- sums of powers of *n* 32.3(271)
- 3rd order 3.1(59)
- trdiagonal matrices 16.3(285)
- Umansky 10.4(441)
- zero-one 4.2(187)

devil's staircase 39.3(238)

difference
- equations (See recurrence relations)
- operators 43.1(46) PXIV(43,229)

differential equations (and, for)
- Bernoulli numbers 25.4(352)
- Brahmagupta polynomials 34.1(30)
- Chebyshev polynomials 41.3(209)
- diagonals of polynomial functions 16.1(33)
- difference equations 1.1(16) 2.3(197)
- exponential generating functions for polynomials 10.2(169) 28.4(321)
- factorial polynomials 27.4(303)
- Gegenbaure polynomials 23.4(294)
- determinant coefficients PIII(115)
- Genocchi polynomials30.3(239)
- Hermite polynomials 34.1(2)
- Humbert polynomials 25.4(356)
- insulin administration amounts PV(497)
- LaPlace's equation 9.3(324)
- Morgan-Voyce convolution polynomials 40.2(98)
- Pipe's reversion for non-linear PVI(93)
- powers of secants and cosecants 44.3(264)
- Ricatti equation 42.3(231)

SUBJECT INDEX
D

differential equations (and, for)
- 2nd order 41.3(209)
  - linear recurrence relations PVI(365)
  - polynomial sequences PVI(215)
- trigonometric functions PVI(201)

Diophantine approximation 35.1(29) 38.1(25) 38.2(136) 39.5(409)

Diophantine equations (and)
- Aurifeuille's identity 54.1(19)
- balancing numbers 37.2(98)
- binomial coefficients 26.2(127)
- bracket function 15.2(170)
- Chebyshev polynomials 36.4(335)
- cubic 38.3(250) 39.3(256) 42.1(36) MRFS(186)
- Fibonacci numbers 54.2(172)
- generalized 27.4(333) 54.1(49)
- heptagonal numbers 40.4(319) 41.5(414) 43.3(194) 43.4(302)
- higher powers 13.3(213) 45.4(322) 48.1(39) PII(1)
- history 48.1(39)
- linear
  - *n* variable 6.3(1) 11.3(315) 15.1(14) 17.4(361) 29.4(367) PV(185)
  - systems 18.2(165)
  - two variable 6.2(177) 38.4(290)
- Lucas numbers 54.2(172)
- Martin Davis' equation 37.3(258)
- mixed exponential-polynomial PVII(295)
- multivariable systems 17.4(333) 18.2(170)
- *n*th degree 21.4(285)
- pentagonal numbers 39.4(299) 40.3(233)
- polygonal numbers 20.4(349)
- Powell's equation 40.3(255)
- quadratic
  - *n*-variable 28.2(141) 34.2(98)
  - 2-variable 6.3(86) 8.1(88) 9.4(437) 10.2(201) 13.1(84) 16.2(130) 16.5(451) 23.3(199) 45.4(304)
  - 3 equations 6.6(360) 7.2(181)
  - 3-variable 25.3(245) 30.4(305) MRFS(34) PIX(247)
  - with a linear term 4.1(63) 17.1(69)
  - with product term 2.4(291) 6.5(11) 13.3(243) 39.1(58) PVII(83) PIX(63)
- quartic 38.5(464)
- recurrence sequences 8.5(463)
- Stroeker' equation 26.4(336)
- systems 20.4(349)
- triangular numbers 34.3(277)
- triplets 39.3(242)

SUBJECT INDEX
D

Diophantine miscellanea
    m-tuple 40.2(118) 48.3(219) PXVI/52.5(212)
    quadruples 39.3(242)
    triplets 39.3(242)
Diophantus problems 17.1(67) 17.4(333) 18.2(155,170) 34.2(164) 37.4(312)
    PII(177,183) PV(45) PVII(61) PVII(69)
Dirichlet theorems 43.1(3,29)
discrepancy of a sequence 50.3(235)
distribution of integers (non-Zeckendorf)
    Gaussian 52.3(243) PXVI/52.5(47,68)
    Stolarsky's 16.1(70)
divergence of sequential integers 54.1(65)
divisibility topics (and, for, from, relating to)
    algorithm: iteration 25.3(204) 27.2(186)
    all or none property 35.2(129)
    basics 1.1(49) 1.2(57)
    binomial coefficients MRFS(98) MRFS(189) PVIII(1)
    Carmichael numbers of higher order 42.2(141)
    cyclotomic quotients 17.1(13)
    denominators in Cantor sets of rational numbers 39.3(238)
    divisors of *n* (and)
        Euler's function 27.3(285)
        exponents mod (n - 1) and (n + 1) 27.3(259)
        harmonic mean of 21.1(18)
    Euler's totient 25.4(333) 28.3(273) 36.4(361) MRFS(205)
    general order recurrences sequences18.3(193) PI(257)
    generating function for general order divisibility sequences18.3(193)
    integer sequences 19.3(208) 26.2(169) 28.2(181) PIII(181)
    integer valued functions 35.4(290)
    iterated maps 36.2 (118)
    multinomial coefficients MRFS(98)
    Pascal's triangle
        elements 19.3(257)
        sequences 16.6(501)
    polynomials (coefficients)
        Chebyshev 39.4(304)
        Morgan-Voyce 39.2(116)
    powers of the golden ratio PVIII(149)
    prime divisors of (n^2 + 3) 30.2(110)
    2nd order recurrence sequences 6.6(322) 12.2(175) 14.2(153) 40.3(269) PIII(203)
        PVIII(213)
    3rd order recurrence sequences 30.2(98)
    Stirling nrs 2nd 27.3(217) 39.5(444)
    strong divisibility sequences 16.6(541) 17.1(13) 23.2(126) 25.4(333) 26.4(366) 30.2(98)
    tests 1.1(49) 36.1(43)
    unitary divisors of *n* 38.5(440)

SUBJECT INDEX

D

divisibility topics (and, for, from, relating to)
    Wolstenholme's theorem PVIII(213)
Ducci map 43.1(53) 50.4(326)
Dujella-Pethö reduction process 54.1(11)
dynamical systems 39.5(398)

E

e 40.4(295)
eccentricity of a Sequence MRFS(1)
editorials
    people Information
        Brousseau, Br. Alfred 26.3(194)
        Feinberg, Mark 1.3(70 5.5(485)
        Hoggatt, Jr., Vernon18.4(289)
        Long, Calvin T. 40.3(242)
        Vine, Jo Ann 41.2(180)
        Ward, Morgan 1.3(32)
    Quarterly Information
        history of *TFQ* 1.4(8)
        policies 5.2(169)
        raison d'être 1.1(1)
        reasons for publication delay 46/47.1(2)
        thanks to referees 24.1(46)
Egyptian fractions PVIII(155) 39.3(221) 42.1(82) 48.3(202)
eigenvalues 40.3(203) 41.2(105) 41.5(451)
elliptic
    curves PV(245) 40.5(460) 44.1(59) 51.2(112)
    pseudoprimes PXVI/52.5(164)
enumeration (counting) topics
    arrays 5.3(235) 8.3(235)
    counting functions (and)
        n-tuples of integers 10.6(609)
        polynomial 10.6(657)
    number of
        binary numbers of length n 22.2(146)
        bit strings PXIV(217)
        derangements of a sequence 16.3(255)
        Latin rectangles 11.3(241) 17.1(34)
        multipartite compositions 17.3(220)
        paths from plate reflections 11.3(302)
        permutations from a sequence 16.3(259)
        representations by (of)
            integers 9.5(526) 11.4(443) 13.4(299)
            n as the sum of three squares 24.2(150)
            ones needed for *n* using + and x 27.1(14)
            sets 10.3(325)
    partitions 2.2(115) 4.3(209) 6.4(235) 27.2(125)

SUBJECT INDEX
E

enumeration (counting) topics
- polominoes 3.1(9)
- residues 5.4(305)
- stopping rule 10.6(661)
- zero-one sequences 15.1(49) 15.3(246)

equal-sum-and-equal-product problem 50.1(58)
equations
- binomial coefficient 17.1(67)
- Bhaskara's 36.2(125)
- Brennan's 53.4(340)
- Bring-Jerrard 36.3(282)
- characteristic 37.3(262)
- complementary PXIII(161)
- congruence 44.4(326)
- Fermat 25.1(62)
- Global Weierstrass 51.2(112)
- Gould's 49.2(158)
- linear systems 36.3(248)
- Mordell 49.4(310)
- quadratic 16.2(155) 32.2(170)
- quintic PVIII(95)
- Ramanujan-Nagell 53.1(78) PXIV(51)
- sums and products 17.2(172)
- sums of powers 14.3(206)
- sums of square 15.3(238)
- 3 variables 13.1(42)

ergodic theory 43.3(243)
Escott's algorithm 36.2(146)
Euclidean algorithm (and)
- basics 2.1(53) 2.2(135)
- Diophantine equations 21.4(285)
- generalizations PXII(115)
- Harris modification 14.3(196)
- J-K strings PXII(115)
- Lamé's theorem 2.2(135) 5.2(153) 9.4(347) 27.4(290)
- least
  - absolute remainder 30.2(161)
  - remainder algorithm 9.4(347)
- length of 11.1(56) PIII(217) PVII(271)
- linear equation in two variables 3.3(219)
- seating methods PXII(203)
- subtractive algorithm 30.1(80)
- trees PIV(257)

Euclid's *Elements* 50.2(144)

SUBJECT INDEX

E

Euler
- exponential generating function 27.5(424)
- -Mascheroni constant 52.4(318)
- prime 50.3(231)
- pseudoprimes 40.1(33)
- Pell sequence 52.1(3)
- values PVIII(103)

exponentiation (towers) 52.2(172)
Eulerian fractions 41.1(23)
Eulerian m-tuple 40.2(118
expansion of functions (for, in terms of)
- analytic 1.1(16) 3.2(101)
- Bessel 1.1(16) 3.2(101)
- circular 1.1(16) 14.1(83)
- convolution 21.2(111) 28.3(215)
- elliptic 15.4(293)
- Engle 24.1(22) 33.2(153)
- exponential series 21.2(111)
- hyperbolic 1.1(16) 15.4(293)
- Laurent series MRFS(82)
- Pierce 21.2(111) 24.1(22) 33.2(153)
- polynomials
  - Chebyshev 1.1(16) 14.1(83)
  - Gegenbauer 3.2(101)
  - Humbert 6.6(318)
  - Legendre 3.2(101)
  - orthogonal 7.5(488)
  - powers of x 26.1(33)
- power series 14.1(74) MRFS(82)
- Rothe’s dissertation 6.6(318)

F

factors and factorization
- Cholesky 40.3(203) 51.2(153)
- largest prime factor of n PXIII(139)
- matrices 41.5(451)
- miscellaneous topics 5.2(171) 7.2(113) 14.2(171) 16.6(518) 18.1(9) 19.3(240) 23.3(249) 37.4(290) 39.3(228,256) 40.3(243) 46/47.3(194) MRFS(19) PVIII(95)
- polynomials 39.4(309)

Fermat primes 40.3(272)
Fermat's theorems 12.4(368) 13.2(110) 19.4(375) 23.2(146) 24.1(67) 27.2(109) 29.1(52) 33.2(179) 53.2(98) PII(1) PV(459) PVII(283,369) 40.3(255)
Ferrars Graph 16.6(548) 42.1(3)
Ferrers-Young diagram PIX(201)

SUBJECT INDEX

F

field theory topics 6.3(71,86) 12.1(81) 12.3(271) 13.3(240) 16.4(354) 19.2(147) 22.2(171) 26.1(46) 26.4(290) 30.4(295) 32.3(260) 33.5(407,459) 34.2(139) 42.1(20) 44.2(103) 45.2(151) 46/47.4(356) 48.4(324) 49.4(310) 50.4(326) 48.1(21) PI(235,257,273) PVI(537) PVII(1,83,133,295,405) PIX(201) PXI(85,129,219,233) PXII(215) PXIII(11,179,301,321,335) PXVI/52.5(193)

filbert matrix 39.3(268)

final digits of powers 43.4(339)

Fine, Richard Spain 37.2(177)

finite differences (Finite difference operator) 5.1(91) 8.1(39) 14.1(1) 15.3(269) 16.1(53) 16.2(166) 16.3(249) 19.5(451) 28.2(151)

fixed point topics 15.4(331,337)

fractals PIX(43)

fractions (See ratios)

Fraenkel array 45.4(304)

Frobenius problem 31.1(32)

functional analysis 6.5(15)

functional equations PVI(431) PVII(291)

functions

- acceptable (mod n) 20.2(106)
- Ackermann 52.2(172)
- analytic 31.3(205) 32.5(389) MRFS(82)
- arctangent 14.5(385) 23.4(319) 24.1(70) 27.5(424) 30.4(290) 33.1(32) 46/47.1(32) PIII(171)
- balancing number 51.3(239)
- Barnes multiple zeta PXVI/52.5(205)
- Bessel 1.1(16) 3.2(101) 10.6(613) 14.5(405) 15.2(112) 23.3(249) 25.4(304) 31.3(205) MRFS(82) PII(7) PVII(415)
- beta 3.2(147) 35.4(342) 38.1(79) 36.5(396,457) 37.1(21) 44.1(39) 50.4(337) PXII(57)
- Boolean 11.4(429) 14.1(9) PXIV(91)
- bracket (floor, greatest integer) 2.4(241) 5.5(401) 7.1(23) 10.2(207) 10.5(526) 15.1(78) 15.2(170) 16.1(19) 16.4(307) 17.4(306) 18.1(28) 21.1(53) 32.2(176) 32.4(297) 33.1(50) 37.3(233) 43.4(299) 44.4(341) 46/47.4(341) 53.3(230) MRFS(172,179) PV(429) PXIII(23,45)
- ceiling 44.4(341)
- chaotic 36.4(309)
- Collatz 49.2(131) 53.2(168)
- combinatorial 7.1(14) 40.1(59)
- Conway's box PXVI/52.5(168)
- cototient PXI(207)
- cube root 33.1(41)
- density 7.2(140)
- diagonal 18.1(3) 28.1(3) 30.1(21) 35.2(137) 35.3(233) PIV(145)
- digamma 45.4(291) 50.4(337)
- dirac delta measure 49.1(66)
- Eisenstein 17.2(103)

SUBJECT INDEX
F

functions
elliptic 15.4(293) 26.2(98) PI(163) 37.3(208)
eta 43.2(122)
Euler totient 32.3(234) 34.3(194) 40.1(68) 40.4(339) 44.2(98) 44.3(249) 44.4(316) 46/47.4(341) PXI(207) 48.2(144) 49.2(102)
Euler minimum 33.4(332)
$\mathscr{F}$- 51.4(330)
factorial (falling, etc.) 35.1(62) 40.2(128) 44.2(131) PVI(283) PVII(1,133) PXI(77)
fractional dominating 32.1(69)
fractional part 53.3(230) PXIII(23)
gamma 3.2(147) 44.1(39) 45.4(291) PXII(57)
Gegenbauer 19.5(422)
generalized circular PV(465,507) PXV(205)
generalized factorial 54.1(65)
generalized totient 37.3(233)
greatest prine factor 48.4(358)
Hofstadter
married 46/47.1(62)
Q-function 53.2(112)
holonomic 35.2(135) 42.1(55)
hyperbolic 33.1(32) 34.2(129) 37.2(1999) 111, 37.3(269) 45.3(202) 45.4(291) 52.4(357) PVIII(103)
hypergeometric 7.4(359) 12.3(300) 13.2(129) 14.1(55) 19.3(200) 19.5(422) 21.2(111) 28.3(194) 29.1(52) 31.3(205) 38.4(342) 43.3(213) 44.1(39) 46/47.1(38) 50.4(337) PI(55) PXII(57) 54.3(259)
hypertranscendental 46/47.3(268)
integer closest to a real number 46/47.4(341)
integer-valued 35.4(290)
iterated 46/47.2(115)
Jordan 32.3(234)
jump-sum PXVI/52.5(124)
Kimberling 49.3(211)
L- corresponding to elliptic curves 51.2(112)
Lambda 1.2(47) 4.3(259) 9.3(264)
logarithmic 34.2(129) 37.3(198) 46/47.2(136) 48.1(4) 52.4(357)
matrix exponential 22.1(61)
Merten PXVI/52.5(168)
Minkowski's question mark PXII(35) PXVI/52.5(168)
Morita p-adic gamma PXIV(191)
multiplicative 40.1(13)
nested 22.4(310)
non-differential continuous PIX(43)
non-linear binomial sum 3.4(292)
number of compositions of n 49.4(290)
number of partitions 46/47.3(262) 46/47.4(341) 49.4(290)
number of Pythagorean triples using an integer n as one 46/47.4(331)

SUBJECT INDEX
F

functions
number theoretic (for, number of, relating to)
arithmetic 31.4(302)
Atanassov arithmetic 29.1(47)
compositions of *n* 2.4(241) 5.5(401) 23.2(149) 50.4(360) PXV(193)
continued fractions 38.3(201)
convolution divisors 16.4(327)
convolution of arithmetic functions 28.4(316) 36.1(3)
Dirichlet problem for arithmetic functions 20.1(41)
discriminator 33.4(332)
divisors of *n* 2.4(241) 7.3(267) 11.3(247) 12.2(199) 21.1(18) 45.1(22) 53.3(206)
Euler's ϕ 16.1(47) 16.4(327) 18.1(80) 21.1(18,26) 22.3(218) 23.3(265) 24.3(273) 25.3(241) 25.4(333) 26.3(275) 27.2(176) 27.3(259) 27.3(285) 28.2(162) 32.4(293) 33.4(332) 36.4(361) 37.1(67) 40.1(68) 41.4(365) 46.3(262) 48.2(144) MRFS(205) PV(585) PVII(333) PXII(153) PXIII(139)
Euler minimum 33.4(332)
fixed points for various arithmetic functions 15.4(337)
harmonic number of divisors of *n* 21.1(18)
Jordan totient 25.3(241) 26.3(275) 37.1(67)
Möbius 12.2(208) 16.4(327) 20.1(41) 22.3(218) 23.3(265) 24.3(273) 25.3(241) 33.2(169) 36.1(3) 44.2(109) 38.5(440) 39.5(398) 40.1(13) 49.2(102) 49.4(340) PXVI/52.5(168)
multiplicative arithmetic 15.2(164) 25.4(320) 26.4(325) 28.4(363)
Niven $\leq n$ 41.5(431)
odd divisors of *n* 20.1(36)
palindromes 42.1(76)
partitions of *n* 22.3(218) 41.5(386) 45.1(22) 45.3(205)46/47.3(262)
period end points for a map 36.2(118)
powers of primes $\leq n$ 23.3(265)
prime factors (divisors) of *n* 11.3(247) 19.3(228) 41.4(365)
primes $\leq n$ 23.3(265)
recursive divisor 13.3(199)
representations of *n* as sums of squares 31.2(129)
seating patterns 33.4(368)
sum of divisors of *n* 11.3(247) 12.3(299) 15.4(337) 18.2(137) 19.1(21) 19.2(121) 21.1(18) 22.3(218) 23.2(158) 25.4(333) 32.4(293) 41.4(365) 45.3(205) 46/47.2(111) 48.2(144) PXII(153) PXIII(139)
sum of unitary divisors of *n* 23.2(158) 25.4(333) 26.4(312) 27.4(317)
tiling a board PXI(257)
various arithmetic functions related to
arbitrary sequence of integers representation of *n* 10.1(81) 14.3(254)
cell location occupancy 40.5(417) 45.4(347)
density 16.4(318)
Jacobsthal representations of *n* 10.5(499)
Lucas representations of *n* 11.4(337)
Pell representations of *n* 10.5(449)

SUBJECT INDEX

F

functions
number theoretic (for, number of, relating to)
various arithmetic functions related to
unitary analogues of Euler, Möibus and the sum of divisors function 28.3(255)
Zeckendorf (Fibonacci) representations of *n* 6.4(193) 8.2(113) 10.1(1,43) 11.4(337) 14.3(244)
visual lattice points in *k* space 2.4(241)
ways to represent *n* as a sum of 3 squares 31.2(129)
Pascal 14.5(461)
polygamma 45.4(291) 50.4(337)
polylogrithmic identities 52.4(357)
pseudogroups 45.4(357)
psi 19.1(56)
q-factorial PVI(291)
Rayleigh 23.3(249) PII(7)
Rédei 48.4(348) 50.3(252)
Schur 30.2(148)
Schwartz 49.1(66)
shift PXIV(91)
shifted factorial 45.1(26)
sigma 32.3(277) PXII(115)
signature 36.4(361)
Sprague-Grundy PXI(167)
Stirling 46/47.4(326)
theta (Jacobi) 24.4(316) 41.3(279) PXII(285) 50.1(5)
3x+1 36.4(309)
trigonometric (circular) 37.2(111) 37.3(269) 40.2(128) 40.3(194) 44.1(26) 44.3(264) 45.4(291) 46/47.1(32) 50.1(51) 50.3(217) 52.3(236)
Wall PVI(431)
zeta (dynamical,Lerch, Riemann, etc.) 3.3(199) 13.4(307) 16.2(138) 21.1(29) 24.1(22) 24.4(316) 39.5(398,409) 40.1(13) 41.1(23) 50.4(337) PXVI/52.5(205)

Fibonacci-A

algorithms involving Fibonacci numbers
computing Fibonacci numbers PXII(161)
E-algorithm 42.2(98)
ϵ-algorithm 39.1(22)
Euclidean 4.4(367) 5.2(137) 11.1(56) 21.4(285) 23.2(177)
golden division 46/47.3(241)
Lemoine-Kátai PIII(287)
subtractive Euclidean 30.1(80) 39.4(320)
Sylvester PVIII(155)
alphabets
Fibonacci numbers 19.1(57) 19.3(271) PIII(89)
Fibonacci words PXI(141)
alternating terms sequence PXVI/52.5(22)

SUBJECT INDEX
Fibonacci-A

applications and models
- computer science
  - Fibonacci cubes 31.1(65)
  - Fibonacci numbers 19.1(57) 19.3(271) 22.3(196) 34.5(436)
  - contagious diseases 34.3(257)
- cryptography
  - Fibonacci numbers PIII(89)
- dynamical systems
  - Fibonacci numbers 35.4(335) PXIII(211)
- education
  - Fibonacci numbers 6.4(266) 7.3(301) 31.1(21) PV(289) PVI(165)
- information science (and)
  - Fibonacci
    - language 41.5(421)
    - numbers 29.1(59) 34.5(465)
    - words 27.1(76) 30.1(68) 31.1(41) 31.3(251) 38.5(432) 41.5(421) MRFS(75) PV(113) PIX(137) PXIII(355)
- music (and)
  - Fibonacci numbers 9.4(423) MRFS(58) PXIII(127) PXV(175)
- science
  - chemistry
    - Fibonacci numbers 7.5(523) 11.3(255) 15.2(173)

arrays (tables and)
- Carlitz Fibonacci 1.2(17) 1.4(23)
- Césaro Fibonacci-Lucas identity 18.3(259)
- coefficients of Fibonacci matrices 34.1(55)
- convolution
  - Fibonacci 14.1(43) 15.3(215) 18.1(51)
  - Fibonacci polynomial 16.5(385)
- Farey-Fibonacci sequences 14.5(389)
- Fibonacci (& related) numbers 20.2(122) 49.3(231) PI(229) PV(405,441,507) PVI(85) PIX(177) PIX(267)
- Fibonacci composition 20.2(122)
- Fibonacci diatomic PIX(29)
- generalized Fibonacci 12.3(241)

asymptotic topics (and)
- Fibonacci (and related) sequences 39.2(168) 43.3(243) 44.1(73) 46/47.3(262) 49.2(102) 49.3(249)
- Fibonacci polynomials 42.4(341)
- moments of Cantor-Fibonacci distributions PVII(311)

Binet formulas (and, for)
Fibonacci, Lucas and hyperbolic identities PIV(91)
Fibonacci polynomials MRFS(54) PV(317)
generalized
Fibonacci numbers 15.2(156) 27.5(424) 31.4(307) 35.1(11) 39.2(158) 43.2(149) 52.3(218)
numbers
Fibonacci 9.1(41) 36.2(129) 43.1(3)
tetranacci PIV(215)
binomial topics (including fibonomial topics)
coefficients (and)
bracket functions 7.1(23)
combinatorics 46/47.1(7) 48.3(276)
congruences 32.1(60) 33.4(290) 36.3(194)
determinants 9.2(113)
divisibility 51.1(78)
equation 24.2(160)
equations with Fibonacci solutions 13.4(295)
Fibonacci identities 37.4(305)
Fibonacci-like numbers PI(9)
Fibonacci numbers (and)
general summation formula for F_{n+1} 8.5(456)
identities 8.5(456) 48.2(161)
sums 15.4(362) 24.3(263) 29.2(141) 33.3(251) 43.2(142) 52.2(121,155) PV(169) IX(19)
sums of powers 4.4(355)
Fibonacci polynomials 18.3(214) 45.1(26)
Fibonacci triangle 32.2(111) 36.3(194) PVI(521)
fibonomial array 12.2(157)
fibonomials 5.4(383) 50.2(155) 54.4(296)
Fontené-et al (and)
Fibonacci coefficients 36.3(194)
Fibonacci identities PIII(239)
Gaussian q- and Fibonacci polynomial coefficients 45.1(26)
miscellaneous and Fibonacci numbers 24.3(263)
Gaussian and Fibonacci numbers 12.2(129)
generalized {the notation is due to Fontené-Ward-Jarden-Torento-Fuchs: see Gould 7.1(23)} for a history of credit for the now-accepted notation.) 5.4(383)
generalized Fibonacci numbers 12.4(339) 34.2(164) 49.4(320)
Hankel matrix 39.3(268)
fibopolynomials PXV(77)
filbert matrix 39.3(268)
fractals 44.1(46)
gcd 10.6(579) PIII(15)
generating function PVII(401)
identities 48.3(241) PIX(19) PXIV(237) 54.3(204)

SUBJECT INDEX

Fibonacci-B

binomial topics (including fibonomial topics)
- lcm PIII(15)
- Mann-shanks primality criterion 10.4(355) 12.2(157)
- mod 3 44.1(46) PVI(521)
- mod p 33.4(290) 36.3(194)
- mod p^2 PV(399)
- moments PVIII(103)
- netted matrices PXIII(223)
- residues 32.1(60)
- tetranacci identities 37.4(305)
- triangle PXV(5)
- Z-transform PXIV(237)

bounds for logarithms of Fibonacci numbers PXI(77)

Fibonacci-C

combinatorics (and)
- Fibonacci
  - determinants 45.1(39)
  - pyramid PVII(255)
- identities
  - Fibonacci 45.4(319) 46/47.1(73)
- numbers
  - Fibonacci 6.1(34) 12.2(141) 45.2(104) 49.2(116)
- polynomials
  - Fibonacci 51.1(63)
  - Fibonacci type 27.3(209)
- sequences
  - Fibonacci binary 28.1(28)

compositions (and)
- Fibonacci numbers 7.3(253) 39.5(430) 49.4(348) 52.1(16)
- Fibonacci numbers (and)
  - convergents for reciprocal sums 46/47.3(268)
  - divisibility 8.5(475)
  - Euler functions of 18.1(80)
  - generalized mod m 41.1(48)
  - mod 2^n 10.5(519) 30.3(211) 38.1(49)
  - mod 3^n 12.1(46) 43.1(22)
  - mod 4 18.1(80)
  - mod 5 51.3(256)
  - mod 5^n 10.5(519)
  - mod 29 50.3(246)
  - mod 100 12.1(87)
  - mod 400 40.5(424)
  - mod L_{2k} 36.1(56)
  - mod m 12.4(349) 12.4(351) 16.4(344)
  - mod m^2 12.4(351)

compositions (and)
Fibonacci numbers (and)
mod p 1.3(33) 16.6(552) 17.1(40,42) 18.2(135) 31.1(7) 31.2(134) 40.4(345) 46/47.1(68) PI(241)
mod p^2 PV(399)
periodic mod m 41.1(72) PIV(289)
power sequences 50.2(175)
pseudoprimes 31.2(173)
summation mod p 52.4(314)
various mods 17.1(1,29) 33.4(290) 41.5(414) 52.2(163) PIV(289)
polynomials
Fibonacci 31.3(194) PVI(105) PXV(211)
polytopes 41.3(229) 43.3(227)
recurrence sequences
Fibonacci 27.1(25)
tetranacci numbers mod m 30.3(232)
continued
fractions (and)
Dirichlet series 46/47.3(268) 48.1(47)
Gaussian Fibonacci numbers 31.1(7)
generalized numbers and the α analogue from Binet's formula 41.1(3)
generalized 33.2(164) 46/47.3(268) 52.1(50) PV(185) PV(547)
golden number 8.2(135) 43.1(3)
hypergeometric function 27.5(424)
identities 3.4(304) 52.3(206)
length of period 42.2(161)
-like ratios 46/47.4(298)
minimum solutions to Pell's equation 13.4(309)
pentanacci MRFS(31)
polynomial 15.3(225)
ratios 2.4(269) 8.2(135) 9.4(427) 31.4(338) 44.3(209) 49.1(66) 52.3(206) PV(185) PXII(269) PXIV(123)
successive Fibonacci numbers 6.6(385)
type sequences 43.3(243) 44.1(73)
zeta function 48.1(47)
convergence topics
Fibonacci
coefficients 24.1(70)
products 15.2(156)
reciprocal sums 30.2(179)
roots of characteristic polynomials PVIII(165)
test 2.1(39)
sequences
generalized Fibonacci 27.3(221) 38.4(326) 40.5(386) 40.5(453)

SUBJECT INDEX
Fibonacci-C

convolution topics (involving)
- arithmetic functions 28.4(316)
- consecutive integers and Fibonacci numbers 42.4(306)
- Fibonacci number sequences 8.2(158) 11.5(511) 39.4(358) 40.4(352) 42.3(231) 48.1(80)
- polynomials
  - Fibonacci 10.6(599) 40.4(352)
  - Vieta-Fibonacci 41.3(240)
  - Vieta-Lucas 41.3(240)
- tile sequences PXII(11)
- triangles (and or square arrays for)
  - Fibonacci sequences 8.2(158) 10.6(599) 11.2(131) 11.5(469,511)

Fibonacci-D

density topics
- binary patterns 26.3(233)
- lattice density 41.3(279)
- numbers and modulo 1 density 49.2(102)
- primitive roots 20.2(112)

determinants and
- Fib identities 19.2(149) 48.1(68) 51.3(268)
- Fib numbers 1.1(65) 8.5(449) 45.1(39)
- Fib numbers minus one 19.5(456)
- Fib polynomials 51.1(63)
- Fib squares 10.2(147)
- generalized Fib numbers 7.3(319) 16.3(285)
- powers of Fib numbers 2.2(81,93) 4.2(129,179) 54.4(340)

difference equations and the (2,F) and (3,F) generalized Fibonacci numbers 31.4(333)

differential equations and
- Fibonacci numbers 2.3(176)
- Fibonacci polynomials 31.3(194) 33.3(268)
- Fibonacci-type polynomials 35.4(361)
- generalized Fib poly 37.3(213) 38.2(167)
- Ricatti equation 42.3(231)

Diophantine equations (and)
- Fibonacci
  - coefficients 3.3(184)
  - numbers 2.4(291) 6.5(11) 13.3(243) 54.2(172)
- first order 54.3(235)
- generalized Fib numbers 52.1(70)
- higher powers and Fib nrs 13.3(213)
- linear *n* variables and Fib nrs 6.3(1)
- Pell's eq and Fib nrs 23.3(199) 45.2(98)
- quadratic and Fib nrs 6.3(86) 8.1(88) 9.4(437) 10.2(201) 13.1(84) 16.2(130) 16.5(451) 23.3(199) PXI(177)
- Stroeker' equation and Fib nrs 26.4(336)

divisibility (and, of, involving)
all divisors of a Fibonacci-like sequence 33.5(464)
Fibonacci number(s) (and)
general properties 19.1(39) 41.5(414) 50.1(36) 54.2(160)
by subscripts 29.4(364) PV(515)
cubes of which divide other Fibonacci numbers PXI(53)
divisors of
Fibonacci polynomials in 2 variables 12.2(113)
Lucas numbers PIX(267)
non-homogeneous Fibonacci recurrence numbers 28.2(107)
other Fibonacci numbers 3.3(187) 4.1(83) 4.3(217) 27.3(242) PIX(267) PXI(53)
squares of 15.1(3)
gcd of two Fibonacci numbers 2.1(57)
index of 22.2(116)
integer power divisors 4.3(217)
k-ordered sequences 20.4(354)
p-adic order 33.3(234) 41.1(72)
powers of that divide Lucas or other Fibonacci numbers 15.1(3) 50.3(239)
prime divisors 3.3(187) 12.2(189) 39.5(386)
primitive divisors with prime power subscripts 1.3(15)
product that divides other Fibonacci numbers PXI(213)
properties
general 10.4(375)
in a quadratic field 22.2(171)
of sub-sequences 51.4(307)
squares of which divide other Fibonacci numbers 15.1(3) PXI(53)
generalized Fibonacci numbers
divisors of other numbers in the same generalized sequence 9.5(529)
prime divisors 51.1(3)
properties 21.4(253) MRFS(66)
Fibonacci polynomials
factors 7.5(457)
irreducibility of 14.4(369)
relatively prime generalized 14.4(369)
prime divisors of a Fibonacci sequence 50.3(207)
product of Lucas numbers and a Fibonacci binomial sum PIX(267)
sequences divisible by powers of Fibonacci numbers 52.2(163)

entry points 4.1(85) 17.1(51) 27.3(242) 36.3(263) 37.2(128) 43.1(3)
enumeration (counting) topics
number of
generalized Fibonacci sequences 10.4(365)
representations by (of)
Fibonacci numbers 4.4(289) 6.4(193)
t-Fibonacci numbers 8.1(6)

SUBJECT INDEX
Fibonacci-E

equations (with)
- Fibonacci numbers
  - higher order 2.1(15)
  - identities 2.1(15) 15.4(323)
  - linear in
    - 1 variable 15.4(323)
    - 2 variables 2.4(314) 3.3(184) 15.4(323)
  - quadratic
    - identities 2.1(15)
    - in 2 variables 3.3(184)
  - 24th degree equation in 2 variables 24.4(344)
- Fibonacci-Lucas numbers
  - identities 2.1(15)
  - linear in 2 variables
  - quadratic 2.1(15)
- Fibonacci ratios = px^2 28.4(306)
- F_n =
  - x^2 2.2(109) 28.4(306)
  - $2x^2$ 2.2(109) 28.4(306)
  - Cx^2, $C < 1000$ 28.4(306)
  - Cpx^2 28.4(306)
  - px^2 28.4(306)
- generalized Fibonacci $u_n = u_q x^2$, q odd 30.2(133)
- solutions of equations 38.2(98)

Euler totient (phi function) and Fibonacci sequences 52.1(3)

expansion of functions (for, in terms of)
- Fibonacci reciprocals 15.4(293)
- polynomials
  - Fibonacci 1.1(16) 3.2(101)
- miscellaneous Fibonacci 16.6(555)

Fibonacci-F

factors and factorization
- complex of Fibonacci numbers 41.1(13)
- Fibonacci/Lucas 1.1(34,43,45) 2.1(33) 2.3(218) 3.2(129) 3.3(232) 3.4(256) 8.1(23) PIV(271) 31.3(274) 45.2(128)

Fibonaccenes 43.3(269)

fibonomials (and) (Also see under numbers & binomials in this file)
- are integers PIX(19)
- arrays 12.2(157)
- binomial coefficients relationships 12.2(129)
- bracket functions 7.1(23)
- constant multiple of a Fibonacci number 5.4(383)
- determinants 9.2(113)
- Diophantine equations 50.1(36)
- Dirichlet density 53.3(206)
- divisibility 10.4(355) 53.3(194)

fibonomials (and) (Also see under numbers & binomials in this file)
generalized and
primality 12.2(157)
sums PXIII(223)
triangle 5.4(383)
generating functions 44.2(172) PVII(401)
greatest common divisor properties 10.6(579)
identities 5.4(383) 10.6(579) 48.3(241) PXVI/52.5(28)
lattice paths PXVI/52.5(28)
Lucas number products PVII(401)
mod 3 44.1(46)
p-adic valuation of 53.3(194)
primality 12.2(157)
prime
divisors of 51.1(78)
numbers 53.3(194)
reciprocals of Fibonacci numbers 48.1(29)
recurrence relations (and)
Fibonacci numbers 5.4(383)
Lucas numbers 5.4(383)
ordinary 12.2(129) 46/47.1(7) 48.3(241)
sums (of)
Fibonacci numbers 4.3(274) 48.3(241)
Fibonacci and Lucas numbers 50.2(155)
general 50.2(155)
generalized Fibonacci numbers 4.3(274) 49.4(320)
generalized Lucas numbers 49.4(320)
products PXIV(237)
products of Fibonacci numbers PVII(401)
tiling 46/47.1(7) 48.3(276) PXVI/52.5(28)
triangles 5.4(383) 10.4(355) 10.6(579) PVII(401) PXV(5)
z-transform PXIV(237)
functions (various, with Fibonacci numbers)
arctangent 1.4(65) 2.1(59)
arccotangent 11.5(539)
arithmetic (of)
Fibonacci numbers 37.3(265)
generalized sequences 31.4(302)
multiplicative 28.4(363)
composite of Fibonacci, Fibonacci-Lucas and Lucas numbers 4.4(363) 15.2(122)
circular PV(465)
entire 24.2(145)

SUBJECT INDEX

Fibonacci-F

functions (various, with Fibonacci numbers)
Fibonacci functions (and)
algebra of 8.4(397)
Argand plot 12.3(233)
complex 12.3(233) 12.3(251) 16.2(97) 29.1(13)
cosines 50.4(352)
derivatives 8.4(397)
generalized PV(465)
golden numbers 5.5(481) 50.4(352)
graphs 5.4(371) 50.4(352)
Halsey's
beta function 29.1(13)
generating function 15.3(276)
sum of integrals 13.3(209)
hyperbolic functions 34.2(129,164) PVII(393)
identities 5.4(371) 5.5(481) 6.4(245) 11.5(539) 13.3(209) 36.2(174) 39.5(436) PV(465)
integrals 5.4(371) 8.4(397) 9.1(34)
logarithms of golden numbers 6.2(138) 20.2(112)
periodic properties 4.1(37)
prime factors 13.2(171)
probability 11.5(517)
reciprocal sums 42.1(66)
sequences 6.5(44)
summation identies 13.3(209)
trees 34.5(413)
trigonometric functions 6.1(1)
two variables 5.4(371)
zeroes 4.1(37)
zeta 39.5(409) 46/47.3(268) 48.1(47)
hypergeometric of Fibonacci numbers 43.3(213)
logarithms of Fibonacci numbers 4.1(89) 7.5(465) 20.2(112)
number of Zeckendorf (Fibonacci) representations of *n* 6.4(193) 8.2(113) 10.1(1,43) 11.4(337) 14.3(244) 46/47.2(103)
sines of golden numbers 16.2(119)
unimodal and Fibonacci searching 10.2(113)
z-transform 11.5(545)

Fibonacci-G

generalizations of Fibonacci sequences
{B, N} sequences 11.1(40)
Horadam { $u_{n+2} = au_{n+1} \pm bu_n$ } (and)
arithmetic functions 31.4(302)
binomial coefficients 38.2(123)
convolution sums 8.2(199)
Diophantine equations 33.1(59)
generalized Q-matrix 37.3(203)

generalizations of Fibonacci sequences
generating function 8.2(199)
identities 37.2(106,162) 37.3(203) 43.4(307) MRFS(65)
mod *p* 37.4(342)
points in E2 and E3 with consecutive members as coordinates 31.3(239)
quadratic reciprocity 33.1(78)
ratios 2.4(269)
relatively prime coefficients 37.4(299)
sums of ratios of consecutive members 31.3(246)
various initial conditions 20.1(65) 43.4(307) 52.1(174)
∞-
Markov chains 38.4(364)
periodicity 42.4(361)
various properties 37.3(223)
Jacobsthal-like { $u_{n+2} = u_{n+1} + bu_n$ }(and)
Binet formula MRFS(93)
congruences mod a power of *n* 32.1(11)
non-integral subscripts 3.2(147) 3.3(233) 31.4(307)
n^{th} (general) order (and)
applications 21.4(285)
identities 14.4(358) 34.2(121) 37.4(305) 52.2(121)
Markov chains 37.1(34)
permanents of {0,1} matrices 33.3(273)
rabbits 6.3(105) 31.3(268)
roots 5.3(259) PV(143)
rounded powers of characteristic roots PIII(57)
sieve formulas 37.4(361)
various initial conditions 41.2(133)
Pell-like { $u_{n+2} = au_{n+1} + u_n$ } (and)
arctangents 33.1(32)
as a function of the initial conditions 6.2(117)
Chebyshev polynomials 33.3(194)
continued fractions 34.3(200)
identities 34.3(200)
inverse hyperbolic tangents 33.1(32)
non-homogeneous with negative subscripts 32.5(429)
Pell equations 32.3(245)
generalized Fibonacci numbers (by, from)
binomial sums 2.4(277)
defined in the complex plane 15.3(233)
Gaussian Fibonacci numbers 15.3(233)
Gibonacci PIX(19) PXII(35)
initial conditions 12.3(241)
k-bonacci 49.1(4) 49.4(303)
ladder networks 13.4(315)
(m,F) and equivalence classes 35.1(3)

generalized Fibonacci numbers (by, from)
matrix subscripts PIV(51)
multinacci 11.1(15) 15.4(319) 18.1(51) 20.3(193) 25.1(72) 26.4(306) 35.4(335) MRFS(130) PV(487) PVII(393)
multivariable PXI(251)
non-homogeneous recurrence relation 37.4(326) PXV(205)
pentanacci 2.4(260) MRFS(31)
Pseudo Fibonacci PXV(205)
quasi-Fibonacci PXIII(89)
recurrence using the current term as a product of the previous 2 terms 33.3(249)
shifting 11.2(209)
tetranacci 2.4(260) 30.1(9) 30.3(232) 36.2(129) 37.4(305) 41.1(41) PIV(215)
(3, F)
difference systems 31.4(333)
recurrence relations 33.1(9)
(2, F) recurrence relations 30.4(310)
two sided 27.4(352)
variable initial conditions 33.1(50) 38.2(104)
generating functions for Fibonacci numbers (and)
exponential (for)
Fibonacci numbers 1.2(69) 8.3(249) 11.3(275) 17.2(118) 26.2(115) 27.5(424) 28.2(166) 49.3(249) MRFS(61) PVI(365)
Fibonacci identities 11.3(275)
Halsey's Fibonacci function 15.3(276)
of order *k* 54.4(344)
ordinary:
convolution of 12.3(293)
numbers 1.2(1) 1.2(61,69) 2.4(267) 3.3(199) 5.5(445) 7.3(253) 9.2(121) 10.3(271) 10.6(571) 12.2(146,179) 15.2(131) 16.2(121) 27.3(283) 28.4(334) 37.3(240) 38.5(395) 41.1(72) 41.4(360) 42.1(3) 49.1(51) PVI(365) PVII(319)
powers 3.4(272) 5.5(445) 6.2(176) 9.2(121) 12.3(293)
products 5.5(445) 10.3(271)
generating functions for Fibonacci with Lucas numbers (and)
exponential generating functions MRFS(61)
ordinary generating functions 10.6(571)
relationship between 34.1(30)
generalized Fibonacci
convolution 18.1(51)
multiple 26.1(14)
numbers 10.3(271) 11.3(275) 11.5(527) 12.3(281) 40.4(352) 41.1(7) 41.2(144) 41.4(321) 42.2(106) 52.1(50)
Halsey's Fibonacci function 15.3(276)
incomplete Fibonacci number sequence 42.2(106)
multisection Fibonacci
convolution array 18.1(51)
numbers11.1(85) 12.2(179)

generating functions for
partial Fibonacci numbers 37.3(240)
q-analogue of generalized polynomials 45.1(26)
sequences from the fibonomial triangle PVII(401)
tetranacci numbers 52.1(50)
geometry
Fibonacci 14.4(289) 19.1(35) 32.5(386) 34.2(156) PVIII(43,353)
gibonomial triangle 53.4(340)
golden number (and)
Fibonacci
generalized numbers 46/47.4(346)
identities 35.3(194) 52.2(129)
limit of ratios 1.3(21) MRFS(31) PIII(101)
line-sequence 30.3(216)
space 30.3(216)
trigonometry 34.2(129)
trees 53.2(152) PVII(145)
graphs and related topics
Fibonacci (numbers and)
bi-pyramids 27.3(247)
complexity 16.1(1) 18.3(229)
determinants and digraphs 45.1(39)
digraph and entropy PXI(225)
distance graphs PXIV(117)
graceful 21.3(174)
identities and graph coloring 46/47.3(220)
networks 32.4(329)
outer-planar 36.3(206)
path counting [for lattices, not graphs] 40.4(328)
representation of graphs PIV(133)
spanning trees 15.1(11) 18.3(229)
trees 19.1(28) 21.3(219)
wheels 12.4(355)
number (of)
graph 20.1(16) 21.3(219) 22.3(255) 44.1(32) 44.4(362) PI(105) PIII(63)
k-dominated for Fibonacci trees 43.2(157)
trees 44.1(32) 45.3(247) PIV(127) PV(273) PVI(155)
proof of a Fibonacci identity 28.1(48)
resonance graphs and Fibonacci cubes 43.3(269)
sub graphs in Fibonacci cubes 31.1(65)
sum graphs 52.1(46)
greatest common divisor (GCD)
altered Fibonacci sequences 9.1(89)
Fibonacci and Lucas numbers 43.1(3)
Fibonacci identity 2.1(57)
Fibonacci-Lucas identity with LCM 5.1(99)

SUBJECT INDEX
Fibonacci-G

greatest common divisor (GCD)
- Fibonacci numbers 43.1(3)
- Fibonacci ratios 39.5(386)

group topics
- Fibonacci (numbers and)
  - algebra 32.5(441)
  - group length PIX(69) PXI(95)
  - circularly generated Abelian 6.1(36)
  - group mod *p* 10.4(345)
  - groups
    - cyclic PIV(63)
    - dihedral PIX(69)
    - Fibonacci-like 15.1(35)
    - free 18.3(268)
    - generalized Fibonacci numbers in finite groups 36.3(216)
    - induced 19.3(264)
    - Lie PIII(27)
    - modular group of quadratic fields 42.1(20)
    - order of a group 16.5(403)
    - period of a Fibonacci sequence in a finite Abelian 24.4(356)
    - presentations PII(45)
    - pseudo16.5(435)
    - subgroup and invertible classes mod *n* PXV(265)
    - symmetric 10.4(365)
    - 2-generated with Fibonacci length PIII(27)
    - upper triangle 14.3(201)
  - hyperbolic geometry PIII(27)
  - problems in the Fibonacci group PV(393)
  - Q-matrix as a counterexample 5.1(44)
  - three dimensional topology PIII(27)
  - trees 17.2(178)
  - varieties 42.3(256) PV(393)
  - k-bonacci numbers in
    - finite groups 30.2(116)
    - semi groups 35.4(335)

Fibonacci-H

historical/biographical topics
- mathematical and related
  - Fibonacci numbers (and)
    - appearance 1.4(41)
    - color wheel PXI(39)
    - history of 2.2(149)
  - Fibonacci star 2.3(161)

SUBJECT INDEX
Fibonacci-H

historical/biographical topics
    miscellaneous
        Fibonacci (Leonardo Pisano) 1.4(15) 11.1(99) 24.1(70) 29.2(103)
        Fibonacci in music PXIII(127)
        The Fibonacci Quarterly 14.4(358) 25.1(1) 50.4(290)

Fibonacci-I

identities for Fibonacci numbers (and, for) (Also see under Fibonacci-N: Numbers)
    alpha 1.2(75) 9.1(1) 34.5(423) 45.4(357) 50.1(68)
    arithmetic functions 14.3(244)
    arctangents 1.4(65) 2.1(59) 27.5(424) 46/47.1(32)
    Bernoull numbers 1.2(60)
    beta 1.2(75) 9.1(1) 45.4(357)
    Binet 1.2(61) 2.3(228) 2.4(267) 5.4(346) 27.5(424) PXII(225)
    binomial
        coefficients 40.1(9)
        theorem 2.3(228)
    Catalan's identity 33.1(82)
    Césaro Fibonacci-Lucas identity 18.3(259)
    Chebyshev polynomials 2nd kind 17.1(18) 27.5(424) 46/47.2(167)
    compositions 7.3(253)
    congruences 2.2(109) 7.2(113) 17.1(29) 27.4(296) 31.2(134) 31.3(251) 31.4(315)
        35.3(225) 36.4(339) PI(39)
    continued fractions 3.4(304) 19.2(163)
    convolution 15.2(117)
    determinants 19.2(149)
    divisibility 37.2(128)
    fourth power 2.4(261)
    functions 5.4(371)
    general 1.1(16,65) 1.2(60,61,75) 1.3(33) 1.4(65) 2.1(29) 2.2(109) 3.1(31,34,63,67)
        3.2(184) 3.3(224) 3.4(304) 4.1(63) 4.3(274) 4.4(369) 5.2(171) 5.4(346,347,383)
        6.1(81) 8.3(249) 9.3(277) 9.5(541) 10.2(147,207) 10.4(441) 10.6(571) 11.2(209)
        12.3(259) 12.4(317) 13.4(289) 14.2(143) 15.1((25) 17.1(18) 17.2(162) 18.3(261)
        19.1(35,82) 19.4(369) 19.5(385) 21.1(3) 21.2(87) 23.3(221) 23.4(356) 24.2(160)
        24.3(194) 24.4(332) 26.4(328) 27.4(296) 27.5(424) 31.2(134) 31.3(194) 31.4(315)
        32.3(284) 33.1(82) 34.2(121) 34.5(444) 36.1(56,60) 36.3(222,240) 36.4(339)
        37.1(14) 37.2(128) 37.4(305,315) 38.1(3) 38.2(98) 40.2(157) 41.1(80) 41.3(220)
        42.1(28) 42.2(155) 43.1(3) 44.3(235) 45.2(138) 45.3(208,221) 45.4(319)
        46/47.2(167) 46/47.3(220,249) 48.1(68) 48.3(197,256) 48.4(307,327) 49.1(28)
        49.3(231) 50.1(19,27,44,68) 50.3(239) 51.4(330) 52.1(20) 52.2(141) 52.3(206,241)
        53.4(340) MRFS(114,159,202) PII(183) PIII(107) PIV(121,133) PV(123,169)
        PVI(303,321,349,389) PVII(115) PVIII(53} PXI(91) PXII(77) 54.1(23) 54.2(172)
        54.4(296)
    generalized (and, for)
        alpha 1.2(75)
        arctangents 33.1(32)
        array of numbers 12.3(241)
        beta 1.2(75)

identities for Fibonacci numbers (and, for) (Also see under Fibonacci-N: Numbers)
generalized (and, for)
Binet PXII(225)
binomial coefficients 33.4(304)
bracket function identities 32.4(297)
Chebyshev polynomials 3.4(241)
congruences 17.1(29)
continued fractions 34.3(200)
determinants 24.3(227)
D'Ocagne identity 33.1(82) 53.3(241)
Fibonacci/Lucas
identities 33.2(135) 35.4(342) 37.2(111) 38.5(420) 40.3(266) 41.4(345) 48.1(68) PXII(225)
reciprocal sums 39.5(392)
fourth power 12.3(272)
functions 12.3(241)
Gelin-Cesáro identity 33.1(82)
general 1.2(75) 3.4(241) 5.3(209) 5.4(371) 6.1(46) 7.1(66) 8.3(249) 9.1(1,51) 9.3(296) 12.3(241,272) 13.4(289) 15.1(21) 15.4(289,323,367) 17.1(29) 20.1(21) 23.3(199) 24.4(362) 27.4(296) 31.2(105) 32.3(284) 33.1(82) 33.2(174) 34.2(121,164) 35.2(169) 35.3(230,265) 36.4(295) 37.3(240) 38.3(282) 38.4(310) 38.5(420,446) 40.2(157) 41.1(80) 42.2(155) 42.3(266) 46/47.1(73) 49.2(171) 49.3(231) 50.1(44) 52.1(20) 52.2(121) MRFS(65) PIII(241) PIV(299) PV(487) PVI(321) PVIII(201} PVIII(369)
gibonacci numbers 53.3(241)
greatest integer function 33.1(50)
in a ring 8.2(182)
inverse hyperbolic tangents 33.1(32)
matrix PIV(51)
Morgado 34.2(164)
non-homogeneous Fibonacci recurrence sequences 35.2(169) 37.4(326) PII(193)
partial Fibonacci numbers 37.3(240)
polynomial 33.2(174)
problem of Diophantus 34.2(164)
products 11.2(153) 32.3(284) 33.1(32) 42.4(353) PXV(255)
products of reciprocals PXV(107)
sums (and, of)
Binet 27.5(424)
binomial 1.4(23) 4.3(270) 5.1(1,45) 7.2(113) 8.1(31) 8.3(249) 12.3(241,272) 15.4(289) 20.1(21) 23.3(221) 24.4(362) 30.3(225) 31.2(105) 34.5(392) 35.3(265) 36.4(295) 37.3(240) 38.4(310) 41.4(321) 43.2(124) 43.3(234) 44.2(145) 49.1(57) 49.3(231) 50.1(27,44) 52.1(50) PIII(241) PVI(389) PVIII(369) PIX(187) PXIII(321)
general 5.1(1) 5.2(171) 5.3(275) 7.1(66,92) 12.3(231,237,241,272) 15.2(155-6) 23.1(29) 26.4(325) 33.1(12) 34.5(444) 35.1(57) 38.3(282) 42.1(47) 42.2(155) 42.3(266) 43.3(234) 44.2(172) 49.1(57) 49.3(231) 52.2(121) 53.4(340) MRFS(65) PIV(299) PV(487,601) PVI(105,303,321) PVII(115) PVIII(369)

identities for Fibonacci numbers (and, for) (Also see under Fibonacci-N: Numbers)
generalized (and, for)
sums
powers 12.3(272) 15.4(367) 41.1(7) 44.1(3) 44.2(145) 49.3(231) 52.2(121) PVI(303)
products 7.1(66) 12.3(272) 13.4(343) 15.4(367) 20.2(114) 31.2(105) 35.3(225) 37.2(111) 39.2(165) 39.5(408) 40.2(124) 41.1(7) 41.2(144) 42.1(47) 43.4(307) 44.1(3) 45.4(337) 48,1(80) 49.3(231) 52.2(121) MRFS(65) PV(601) PVI(389) PXI(243)
quotients 36.4(295) 42.3(250) 45.3(208)
reciprocals 9.3(299) 9.5(449) 27.5(424) 32.3(284) 33.1(32) 33.3(194) 39.2(149) 39.5(392) PXIV(171)
squares 37.2(111)
tangents 33.1(32)
greatest integer function 33.1(50)
golden number 34.5(423) 49.3(249)
Halton's general summation identity 3.1(31)
hyperbolic functions 17.1(18) 21.2(87) 34.2(129) 46/47.2(167)
hypergeometric functions 38.4(342) 43.3(213)
in a ring 13.3(280)
Kummer's identity 36.4(339)
Lucas numbers (and, of)
Binet formulas 9.3(277) 27.5(424)
binomial coefficients 2.1(29) 46/47.2(107)
Chebshev polynomials 27.5(424)
congruences 17.1(29) PXVI/52.5(212)
cyclotomic polynomials 17.1(18)
generalized Lucas and Chebyshev polynomials 3.4(241) 17.1(18)
identities (involving)
alpha 1.2(75) 26.2(115)
arctangents 33.1(32)
beta 1.2(75)
Binet formula powers 27.5(424)
hypergeometric functions 43.3(213)
general 1.1(65) 1.4(65) 2.1(59) 3.1(54,67) 3.4(304) 4.1(63) 4.3(262) 5.4(367) 7.1(1) 7.2(201) 9.1(1) 10.2(147) 10.3(303) 10.4(441) 10.6(571) 13.2(115) 13.4(289) 15.2(117) 17.1(18,29) 19.1(39) 19.4(369) 19.5(385) 21.2(87) 24.2(160) 24.3(194) 27.5(424) 31.3(194) 32.3(245) 33.2(135) 34.5(444) 36.1(56,60) 37.1(14) 37.1(39) 37.3(240,248) 38.2(98) 39.2(116) 41.1(80) 41.2(122) 41.3(220) 43.1(3) 45.2(98) 45.4(304) 46/47.3(220,249) 48.3(197,256) 48.4(307) 50.1(27,68) 50.3(239) 51.3(194) 51.4(330) 52.1(20) 52.2(141) MRFS(202) PIV(121) PV(169,257) PVI(349,389) PVIII(201} PXVI/52.5(212)
products (of)
general 5.4(367) 7.1(1) 7.2(201) 11.2(153) 19.5(385) 24.3(194) 32.3(234) 34.3(271) 36.3(222,240)

identities for Fibonacci numbers (and, for) (Also see under Fibonacci-N: Numbers)
Lucas numbers (and, of)
identities (involving)
products (of)
quotients 36.3(222)
quaternions 7.2(201)
quotients 6.1(96) 15.1((25) 36.3(222)
sums (and, of)
binomial coefficients 2.1(29) 4.4(355) 8.1(1,61) 9.1(1) 13.4(289) 15.1((25) 15.4(362) 24.3(194) 34.3(271) 35.3(230) 39.2(116) 46/47.3(207) PV(169) PVI(389)
general 2.2(105) PXI(243) 13.4(340) 15.3(254) 31.1(28) 54.2(160,166)
hyperbolic functions 21.2(87) 27.5(424) 33.1(32)
powers 16.5(411) 24.3(194)
products 7.5(464) 8.1(61) 9.1(1) 9.3(277) 10.6(571) 11.2(153) 11.3(275) 16.5(411) 24.3(194) 31.3(194) 34.3(271) 38.1(3) 44.2(172) 45.2(171) 52.1(20) MRFS(61) PVI(105)
quotients 26.2(115) 27.5(424) PIII(107)
reciprocal products 7.2(211) 9.4(402)
unified number identity 15.3(254)
master identities of Hoggatt, Phillips and Leonard 9.1(1)
matrices 35.4(300) 37.1(14)
mod 5 10.4(375)
mod 5^k 10.4(373)
mod m 12.1(51)
Morgan-Voyce numbers 37.4(320)
π 27.5(424)
polynomials 31.3(194) 35.1(19)
power sums 7.5(467) 19.5(385)
Primitive part 36.3(222)
products 3.1(54) 5.4(367) 7.1(1) 9.1(1) 9.3(277) 11.2(153) 11.5(523) 17.1(18) 19.5(385) 24.3(194) 33.1(32) 36.3(240) 43.2(137) 45.3(208) PV(169) PVI(105)
products of reciprocals PXV(107,165)
Q-matrix 1.2(61) 1.4(65) 3.1(67)
quasi-Fibonacci PXIII(89)
quaternions 7.2(201)
quotients 6.1(96) 7.3(253) 15.1((25) 17.2(162) 27.5(424) 45.3(208) PIII(107)
R-matrix 2.1(29) 2.4(261)
Ramanujan 50.3(227)
ratios 18.1(9) 31.2(134) 33.1(32)
Schur functions 30.2(148)
subscript variations 11.1(63) 34.3(271) PIV(51) PVI(321)
sums (and, of)
alpha 48.2(150)
arctangents 27.5(424) 46/47.1(32) 46/47.2(167) 52.2(129)

identities for Fibonacci numbers (and, for) (Also see under Fibonacci-N: Numbers)
sums (and, of)
Bernoulli
numbers 39.4(324)
polynomials 27.5(424)
beta 48.2(150)
binomial coefficients 1.2(1) 2.1(29) 2.4(261) 3.1(31) 4.3(270) 4.4(355) 7.2(113) 7.3(253,303) 8.1(61) 9.1(1) 9.4(405) 11.1(63) 11.2(153) 11.3(275) 12.4(336) 13.1(59) 15.1(25) 15.4(362) 16.2(121) 16.5(411) 17.2(162) 18.3(259) 19.4(373) 23.2(151) 23.4(356) 30.1(62) 31.1(28) 35.3(230) 36.1(63) 37.2(135) 43.2(124,142) 43.3(213) 44.2(166) 46/47.2(107,167) 46/47.3(207) 48.1(62,77) 48.2(161) 50.1(44) 50.4(352) 52.1(50) MRFS(61,114) PIII(241) PV(169) PXI(263)
cubes 50.1(19) PXI(45,277)
general 1.3(67) 3.3(214) 6.2(97) 9.5(541) 11.3(284) 13.2(115) 15.1(73) 16.2(121) 17.2(162) 19.1(82) 21.1(3) 23.1(29) 23.3(221) 26.2(115) 28.4(316) 29.2(141) 31.2(134) 32.3(245) 39.2(123) 43.2(104) 45.2(164) 46.2(107) 46/47.3(249) 50.1(5) 50.4(297) MRFS(157,192,202) PIII(107) PVI(123) PVIII(149} PIX(87) PXI(91,109) PXV(19) PXVI/52.5(150) 54.1(31,79) 54.2(105,154) 54.4(327)
general weighted 54.(149)
golden numbers 46/47.1(32) 52.2(129)
hyperbolic functions 46/47.2(167)
Lucas triangle coefficients 43.2(142)
multiple 7.3(303) PVI(123) PXI(243)
Pascal's triangle 2.4(261)
powers 1.3(33) 5.1(45,91) 6.1(81) 7.5(467) 10.3(303) 16.3(213) 16.5(411) 37.3(248) 37.4(315) 45.2(171) 46/47.2(107) 46/47.3(207) 46/47.4(312) 48.2(161) 48.4(307) 49.1(28,51) 49.3(231) 52.1(20) PV(123) PVI(303) PXI(243) PXIII(297) PXV(19) 54.1(23) 54.4(327)
products 1.3(33) 1.4(23) 3.1(31) 6.2(97) 8.1(61) 9.1(1) 11.1(63) 11.3(275) 12.2(179) 12.3(259) 15.4(362) 16.5(411) 20.2(114) 35.3(225) 37.3(248) 38.1(3) 38.4(310) 39.2(165) 39.5(408) 40.4(352) 45.2(164,171) 48.1(80) 48.2(168) 50.3(239) MRFS(61) PXI(243) PXV(19) PXVI/52.5(150) 54.1(23)
quotients 5.1(45) 38.3(223) 38.4(310) 42.3(250) 49.1(76)
ratios 15.2(131)
reciprocal products 7.2(143,211)
reciprocals 1.2(1) 4.4(369) 7.2(143) 9.4(402) 9.5(449) 14.5(453) 15.4(293,356) 17.2(147) 19.1(14) 22.3(261) 24.4(316) 26.2(98) 27.5(424) 28.3(223) 32.1(18) 33.3(194) 36.1(66) 37.2(122) 37.3(208,254) 38.3(223) 39.5(392) 42.3(250) 46/47.3(262,268) 49.1(76) 52.3(206) PVII(197) PVIII(155)
trigonometric functions 19.4(373) 41.1(13) 42.3(216) 46/47.1(56)
zeta function 46/47.3(268)
z-transform 11.5(545)
inequalities
Fibonacci 1.3(15) 2.1(15,45) 29.1(30) 30.1(54) 42.1(28) 46/47.2(103) 48.4(327) 49.1(28) PVIII(155)
Fibonacci-Lucas 2.1(45) 41.1(20)

SUBJECT INDEX
Fibonacci-I

inequalities
- Fibonacci polynomials PVIII(165)
- powers of 2 52.4(344)
- reciprocal 41.5(441)

integer representations
- algebraic and geometric basis for Fibonacci representations 14.4(289)
- and Fibonacci polynomials 11.4(399)
- and Stern's diatomic array 41.2(169) PIX(29)
- by
  - Fibonacci
    - and Lucas ratios as Fibonacci representations PIII(107) PV(217)
    - numbers 3.1(21) 4.4(289) 6.4(193) 8.2(113) 10.1(1) 10.5(527) 15.1(57) 20.3(193) 24.4(336) 34.2(156) 39.5(455) 40.3(260) 41.2(169) PII(97) PIII(89) PVII(39) PIX(29)
    - squares 10.1(103)
  - generalized Fibonacci numbers 7.5(494) 18.4(290)
  - higher order Fibonacci numbers 10.1(43) 10.1(71)
- partitions of Fibonacci numbers 6.1(22) 18.3(220)
- Fibonacci combinatorics 29.2(124)
- Fibonacci for Pascal triangle sequences 42.1(38)
- greedy and lazy Fibonacci expansions 43.1(60)
- integers having prime p number of Fibonacci representations 40.3(260)
- lexicographic ordering of Fibonacci representations 20.3(193)
- maximum and/or minimum number using Fibonacci numbers 1.4(72) 2.2(114) 8.3(242) 11.3(317) 15.3(237)
- multinacci numbers 20.3(193)
- smallest integer having F_k representations PVIII(47)
- Wythoff numbers and Fibonacci representations 23.4(308)

integers sets and
- Fibonacci numbers (and)
  - combinatorics 12.2(141)
  - Diophantine equations PIII(197)
    - multi sets 29.2(108)
  - partitions 6.4(235)
  - Wythoff pairs 23.4(308)
- Fibonacci sets and their duals 26.2(152)

integral representation of 53.4(313)

Fibonacci-J

-Jacobsthal number convolution identities 54.4(335)

Fibonacci-L

last digits and Tribonacci, pentanacci and hexanacci numbers 2.4(261)

lattice topics
- Fibonacci number 13.3(215) 28.1(72) 23.3(232) 41.3(279)
- paths (and, in, on) (Note that some paths not related to lattices)
  - constructing Fibonacci ratios PVII(239)
  - Fibonacci digraphs 45.1(39)
  - Fibonacci numbers 2.1(13) 3.2(143) 8.2(185) 12.4(336) 41.3(263)

least common multiple (lcm) (and)
    Fibonacci identities 5.1(99) 33.3(211)
Leonardo of Pisa (Fibonacci) 1.1(57) 1.4(15) 11.1(99) 11.3(284) 29.2(103) 42.1(82)
    PIX(xxix)
-Like numbers and
    congruences 53.4(335)
    periodic topics 53.4(335)

magic squares
    Fibonacci 2.3(216) 3.2(146) 6.1(77) 6.4(299) 48.4(2010)
    Freitag Fibonacci 6.1(77) 50.2(119)
    general 48.4(298)
matrix topics
    Fibonacci (and)
        alternate Fibonacci numbers MRFS(114)
        Cholesky factorization 40.3(203)
        circulant 44.1(59)
        congruences 41.1(48)
        determinants 45.1(39)
        equation 23.3(258)
        factorization 41.1(13)
        functions of permanents 7.5(539)
        generalized 9.3(264) 30.3(225)
        generalized Fibonacci numbers 16.5(447) 40.2(106)
        ideal lattices 41.3(279)
        in a modular group 42.1(20)
        jacket PXIII(335)
        line sequences PVI(339) PIX(145)
        linear algebra of generalized 41.5(451)
        lambda functions 1.2(47) 4.3(259) 9.3(264)
        miscellaneous 2.3(177) 4.3(259) 7.5(539)
        mod *n* 1.2(29)
        numbers with matrix subscripts PIV(51)
        permanent function 7.5(539)
        pseudoprimes 18.3(261)
        rowed 18.1(43)
        Q (for, and; Note that some authors used symbols other than Q)
            bsics 1.2(61)
            diagonalization of 34.1(55)
            direct products of 24.3(209)
            eigenvalues of 40.3(203)
            Fibonacci identities 26.2(115) 31.4(315) 35.4(300) 37.1(14) 40.3(203)
            generalized Fibonacci numbers 12.4(381) 20.1(73) 22.2(134) 22.3(204)
                39.2(158) PV(487)
            generalized 10.3(255) 12.4(381) 20.1(73) 22.2(134) 22.3(204) 33.1(64)
                34.1(55) 37.3(203) 39.2(158) 24.3(209)
            history of 19.3(250)

SUBJECT INDEX
Fibonacci-M

matrix topics
Fibonacci (and)
Q (for, and; Note that some authors used symbols other than Q)
Kronecker square PII(69)
Maclaurin series of
exponential, hyperbolic, logarithmic, trigonometric 26.2(115)
modified for Fibonacci numbers 14.5(419)
modular forms 48.4(317)
generalized 29.2(164)
properties1.3(61)
spectral decomposition 13.4(307)
sums of powers 10.4(337)
translations of 37.3(203)
Fibonacci related
Filbert 46/47.2(167) 48.1(29) 49.1(66) 51.2(153)
Hadamard PXIII(335)
Hankel matrices 38.5(384) 39.3(268) 41.1(48) PXI(265) PXII(27) 49.1(66)
Hilbert matrix 39.3(268) 46/47.2(167)
Hessenberg 51.1(63)
Jacket PXIII(335)
n^{th} orderc linear recurrence relation PV(601)
non homogeneous recurrence relations PI(235)
quasi-cyclic Fibonacci-Lucas 40.3(280)
R 40.2(146)
self-fusion 52.3(195) PXV(271)
stochastic 15.4(333)
tetranacci numbers 30.1(9)
tridiagonal 42.3(216) 16.5(435)
variations 37.4(333) 40.3(203)
measure theory (and)
Fibonacci number sequences 16.3(193,195) 39.1(5)
miscellaneous Fibonacci topics
accident theorem, The 44.3(235)
algebra 32.5(441)
α-integers PXI(233)
arrays 36.2(98) PIX(29)
boards PXIII(313)
chains PV(429)
congruences 39.5(398) 40.2(146) 40.5(424) 41.1(41,72) 41.4(321) 41.5(414)
45.2(151) 49.3(201) 51.3(256) 51.4(307) PIX(167)
convergence tests 2.1(39)
cubes 31.1(65) 39.1(12) 43.3(269)
curves (and graphs) 5.4(371) 5.5(481) 12.1(92) 12.3(233,251) 26.1(3) 27.3(221)
28.1(22) 45.1(39)
determinants 45.1(39)
digit topics 39.4(334)
digraphs PXI(225)

miscellaneous Fibonacci topics
- Diophantine equations 49.1(28)
- distance PXV(137) 51.3(228)
- Egyptian mathematics 4.4(339) 9.2(177) MRFS(58)
- exponents 44.3(264)
- factorial 46/47.3(262) 50.2(132)
- far-difference representations 52.3(243)
- Fibonacci trigonometry 34.2(129)
- field theory 38.1(17)
- fractions 45.1(35)
- geometry PVII(435) 50.1(19)
- groups PII(45) PV(77,393) 36.3(216) 42.3(256)
- harmonic quadruples 37.3(252)
- honeycomb P.VII(435)
- hyperbolic functions 34.2(129) PVII(393)
- ideal lattice 41.3(279)
- inequalities 41.1(20) 41.2(98) 41.5(441) 42.1(28.38) 46/47.2(153) 49.1(22,28) PXII(317) PXIII(153) PXIV(171)
- Jacobsthal Fibonacci line 39.3(194)
- k-matrix 41.2(108)
- k-sequences 41.2(108)
- knots 48.2(137)
- languages 41.5(421)
- length PXI(95)
- length of a finite group PIX(69)
- Liber Abaci 43.1(3)
- matrices 22.2(134) 40.3(203,280) 41.5(451)
- meta-Fibonacci sequences 53.2(112)
- modified numerical triangles 34.2(129)
- modular sets 41.4(307)
- nested radicals 52.1(27)
- networks 32.4(329)
- number convolutions 40.4(352)
- number of Fibonacci sequences 10.6(657)
- number of a graph 36.3(206) 44.4(362)
- operator in ℓ_1 space 6.5(15)
- orbit P.III(27) PIX(69) PXI(95)
- pentagons PVI(381)
- permutations 43.3(234)
- plane 14.4(289)
- polynomials with
  - Fibonacci (and)
    - numbers as
      - coefficients 21.1(62)
      - exponents 46/47.1(53)
    - polynomials as coefficients 16.2(113)

miscellaneous Fibonacci topics
polytopes 43.3(227)
powers 2.2(81) 7.5(476) 15.4(323) PIII(57) PVIII(201) 46/47.4(312) 48.3(256)
power sequences 50.2(175)
primitive roots 45.1(64)
pseudoprimes 34.1(75) 35.1(35) PVII(327) 41.4(334) 46/47.3(198) PXII(239) 48.2(98)
Pythagorean relationships 41.2(98)
quaternions 46/47.4(356)
radix code PVII(9)
ratios 44.3(209)
recurrence relations 12.3(241)
self-fusion matrix 52.3(195)
sets 19.5(463) PIX(137)
shuffle mapping PXI(23)
spaces 4.2(97) 6.5(15) 13.3(260) 26.3(233) 30.3(216)
telescoping 44.3(235)
tiling 13.1(45) 13.2(137) 27.4(323) 46/47.1(7) 49.4(290) 52.2(121) PXII(179) PXIII(237) PXV(13)
tracks PXI(233)
trees 35.4(309) PIII(37,133,155,325,335) PV(273) 38.2127) PVIII(195) 40.5(441) 43.2(157) 43.3(262) 44.1(59) 45.3(247)
vector polygons PIX(247)
vectors P.VII(435) 45.2(171) 50.1(51)
words 19.4(297) 31.3(251) 33.2(104) PVI(73) 38.5(432) 41.3(194) 41.5(421) PIX(137) PXI(67,95)
Zeros and roots 4.4(313) 5.3(259) 11.3(271) 35.2(160)
Möibius definition of a Fibonacci number 41.1(3)
multinomial coefficients (and)
Fibonacci numbers 4.4(307) 8.5(456) 21.2(82)
multisection for Fibonacci sequences 41.1(72)

number of a graph 53.3(237)
numbers and sequences (and, relating to)
alternative formulation for 16.1(70)
Apollonian circles PXI(199)
arrays (various) PVI(85)
arithmetic progressions 32.2(108) 45.3(254) 46/47.1(10) 53.1(53,68) PXIII(355)
as coordinates in 2-dim graphs 53.1(34)
as exponents in polynomials 46/47.1(53)
asymptotic density PXVI/52.5(35)
Beatty sequences 49.2(151)
Bell polynomials PXVI/52.5(54)
Benford's law PXVI/52.5(35)
Bernoulli polynomials 13.1(59)
binary strings 45.3(233)
bracket function 10.2(207) 21.1(53)
Burgstahler problem 40.3(194)

numbers and sequences (and, relating to)
Chebyshev polynomials of the 2nd kind 1.4(1) 26.1(20) 40.5(424) 41.1(13) 42.2(149) 42.3(216)
Chinese remainder theorem PIV(241) PXII(77)
close to a power of 2 numbers 52.4(344)
coding theory PVIII(75)
coefficients of elliptic curves 51.2(112)
color compositions and palindromes 50.4(297)
compositions 13.3(233) 52.1(16)
congruences 24.4(332) 52.2(163)
continued fractions 49.4(330) PXII(269)
convolution PIX(267)
convolution arrays of Fibonacci numbers 15.3(215)
convolved and a difference equation 21.4(260)
cubed 19.1(39)
cubes (in) 50.1(18)
cumulative connection constants 38.2(157)
D(n)-m-tuples 53.2(124)
decimal fractions 19.5(414) 22.3(229)
decimation 44.3(216)
d-composite 52.2(148)
Dedekind sums 38.3(223) 43.2(122) 48.3(260)
determinants 48.1(68)
DFF triangle 29.4(316)
digit reversal problem 33.1(26)
Diophantine
equation 52.4(290)
m-tuples 48.3(219)
problem PII(177) PV(45)
sets and Fibonacci numbers PIII(197)
divisibility properties 32.3(226) 52.2(163)
double indexed 41.4(290)
Ducci process 36.5(419)
dynamical systems PXIII(211)
electrical power lines 35.2(149)
entry points 16.1(47)
Eulerian polynomials 9.1(18)
F-triangle 38.2(98)
factors of the binomial circulant determinant 18.1(9)
falling factorial sums 35.1(62)
family of polynomials 52.4(349)
Fibonacci-like congruence mod (generalized Fibonacci numbers) 5.3(298)
fractals 32.1(69) PIX(43)
Frankel array 45.4(304)
function $f(x) = (x + 1)^{-1}$ 33.4(357)
functional equations PVII(291)
Gaussian sums and identities 3.4(315)

numbers and sequences (and, relating to)
generalized (and)
altering initial conditions 16.1(81)
α sums 36.5(457)
Binet formulas 15.1(21) 15.3(254) 20.1(38)
binomial coefficients 12.4(317) 40.1(9)
Chebyshev polynomials of the1st kind (and) 37.4(361)
coaxal circles 22.3(270)
composite numbers 44.4(358)
congruences 24.4(332) 32.1(2) 42.1(47) PVI(537)
continued fractions 26.3(219) 49.3(255)
convergence 49.3(255)
co-related sequences PIV(121)
curves curves 26.1(77) 29.3(235)
decimal fractions 22.3(229)
Dedekind sums 48.3(260)
determinants 33.2(135) 38.5(446)
Diophantine
equations 23.3(199)
problems PVII(295)
dither masks PVI(349)
divisibility
properties 35.2(129) 40.3(269) PXI(53)
sequences18.3(193) 25.3(214)
dying rabbit problem 49.2(171)
entry points 29.3(197)
Euclidean coordinates 24.4(366)
folded sequences 16.6(530)
fractals 35.3(206)
generalized binomial coefficients 31.2(105)
generalized golden ratio 53.1(74) 54.4(344)
generating functions 15.3(215,221) 31.2(105)
golden points PV(1)
injected 2-sided 21.1(37)
interspersion
arrays PXIV(79)
sequences 48.1(13)
irrational sums of reciprocals 32.4(346)
line sequences 40.5(438)
logarithms of 14.3(214)
matrices 39.4(339) 40.5(417) 41.1(48)
means: arithmetic, geometric and harmonic 22.4(354)
Moessner's process 24.4(349)
moments problem 38.5(386)
multinacci 11.4(399) 11.5(457) 15.1(73)
nearly golden sections 38.2(174)
Nörlund-Euler polynomials 34.4(314)

numbers and sequences (and, relating to)
generalized (and)
numbers (other)
Lucas -Bernoulli numbers 46/47.1(26)
Monzingo 29.3(256)
powers of irrational 50.4(304)
Pascal T-triangles 22.2(146)
pentids MRFS(67)
periodicity PIV(37) PVIII(325)
prime divisors 17.2(111)
primitive divisors 39.5(439)
products 31.2(105) 45.4(337)
Q matrix 30.3(225)
rank of apparition 13.2(159) 20.4(311)
ratios 45.4(322)
reciprocals and inverse tangents and inverse hyperbolic tangents PIII(171)
recurrence relations 30.1(77) 31.2(105) 45.4(337)
residues 15.1(2) 29.1(72) 29.4(333) PII(113)
rings of polynomials PIX(297)
stability 42.2(114)
sums of products 15.2(155)
trigonometric functions 37.2(111)
uniform distribution mod *m* 34.4(298)
Zeckendorf arrays PXIV(79)
zeroes of polynomial functions 42.1(55) 42.2(98)
generalized Binet formulas 49.4(355)
generating disjoint coverings 31.2(162)
geometry of squares 10.3(303)
hardware design 28.2(102)
hexagonal chains 45.1(3)
Hofstadter Q-sequence and married functions 46/47.1(62) 49.3(227)
Hosoya's triangle 50.2(163)
identical characteristic values 6.5(75)
intertwined 2nd order recurrence relations 43.4(316)
k^{th} lower and upper Fibonacci sequence 44.4(335)
lattice point paths 40.4(328)
line sequences 40.1(20) PIV(203)
linear algebra of all Fibonacci sequences 6.5(35)
logarithms of 10.3(277) 14.3(214)
Lucas triangle coefficients 43.2(142)
method for generating PXV(255) PXII(77)
mod 3 53.3(265)
mod m 53.1(34)
mod *p* 52.1(39)
modified numerical triangle relating to ladder networks 32.2(124)
modular sequences 52.1(39)
Moessner's process 24.4(349)

numbers and sequences (and, relating to)
möibius inversion 44.2(109)
Morgan-Voyce polynomials 35.3(233) 38.3(260) PI(141) PVIII(307)
Morse codes PV(481)
multiples of squares 40.1(41) 49.2(166,)
music PXIII(127)
negative Pascal triangle 32.3(269)
nested radicals 45.3(202)
nodes relating to double integrals 21.2(129)
nonhomogeneous 25.1(81) 25.4(361)
normal Fibonacci numbers 6.2(162)
number of Fibonacci representations of an integer PXVI/52.5(168)
number theoretic functions 41.4(365)
numbers (other)
Bernoulli PXV(255)
central factorial 32.5(395)
Euler 15.3(254)
golden 21.1(53) 49.2(151) 52.1(66)
k-step numbers 49.2(134)
Lucas (and)
congruences 45.2(151)
determinants 40.3(280)
Diophantine equations 40.4(319) 45.4(304)
factorizations PIV(271)
folded sequences 14.2(129)
incomplete 42.2(106)
pentagonal numbers PVI(349)
polygonal (various) 43.4(302) 46/47.3(235)
powerful 45.4(362)
Rado PVI(143)
Riesel 46/47.3(216)
Sierpinski 46/47.3(216)
triangular 23.1(77) 27.2(98)
OEIS PXV(219)
of the form $k^2 + k + 2$ PVIII(241)
1-factors of a graph 28.1(81)
one more or less than a perfect power 19.4(369) MRFS(208)
p-adic valuations 53.3(265)
pairs of Selmer polynomials 50.4(313)
Papal sequence 25.1(57)
partial Fibonacci 34.1(7) 34.2(164) 34.4(326) 34.5(409) 37.3(240) PI(9) PII(163)
PIII(139) PV(69,305,331) PVI(173,231,257) PVII(61,185)
partition function PVIII(61)
partitions PVII(319)
perfect
powers 7.3(76) 16.5(451) 16.6(515)
squares 5.4(347) 53.2(124)

numbers and sequences (and, relating to)
- periodic recurrence relations 45.4(357)
- phylotaxis PXIII(257)
- Pierce expansions 33.2(153)
- pixels PVI(349)
- plate reflections 17.2(118)
- polygonal chains 24.3(238)
- polymers 35.1(75)
- polynomial generalizations 43.4(328)
- polynomials with binomial coefficients16.3(216)
- polynomials yielding Fibonacci numbers 9.5(541) 28.2(151)
- power 46/47.1(53)
- primality tests PXIII(301)
- prime powers of an integer 21.3(215)
- primes and congruence pairs 51.2(98)
- pseudo Fibonacci numbers
  - congruences for various modular numbers 16.4(310) 17.2(142)
  - identities 6.6(305) 7.1(13)
- pyramid PVII(255)
- Pythagorean
  - triangles 50.1,68)
  - triples 17.1(1) MRFS(34)
- quadratic equation in 2 variables PVIII(75,197)
- quitting probabilities 53.2(130)
- quotients PXIII(273)
- random number generators PIV(1)
- reciprocals and inverse tangents and inverse hyperbolic tangents PIII(171)
- reflections 24.3(268)
- regular sequences 46/47.1(10)
- related sequences and a matrix continuant 13.1(51)
- representing Fibonacci numbers 10.6(657)
- residues mod *m* 21.3(189)
- Riemann zeta function 54.4(319)
- secondary Fibonacci sequences MRFS(1)
- self-replicating systems 21.2(97)
- sequences (of)
  - consecutive perfect squares 23.1(36)
  - Fibonacci squares 10.3(247)
  - RF PIX(159)
  - various generalizations 25.2(111) 27.1(7) 27.3(229)
- series transformations 28.2(166)
- shuffle PVI(349)
- sieves 12.4(393)
- spanning trees 12.3(259)
- squares 49.2(166,)
- Stolarsky arrays MRFS(134)
- sum of divisors PXII(153)

SUBJECT INDEX

Fibonacci-N

numbers and sequences (and, relating to)
tiling 27.4(323) 49.4(290) 54.1(23)
Tojaadi sequences PXV(63)
tournaments 46/47.3(241)
trick 23.3(221)
trigonometric functions 50.3(217) 53.4(313)
uniform distribution 27.4(335)
van der Corput sequence 50.3(235)
varieties 42.3(256)
vector
vector sequences PVIII(353)
space of Fibonacci numbers 6.5(35)
wheel graphs 51.3(259)
which are products of Pell numbers 54.1(11)
words PV(113)
Wythoff
pairs MRFS(134)
triangle PXIV(155)
Zeckendorf (and)
arithmetic PVII(129)
matrix 48.2(168)
probability PVII(105)
representation of a sum of Fibonacci numbers 53.3(230)
sums in base b 51.4(319)
theorems 27.4(338) 34.2(147)
weight factors 41.5(405)
zeroes and ones in sequence of length *n* 22.2(144)

Fibonacci-O

order topics (and, for, involving)
-adic numbers and Fibonacci numbers 33.3(234) 41.1(72)
Fibonacci sequences 1.4(43) 3.1(71) 6.2(117) 8.5(516) 20.3(193) 28.2(172) 42.1(28) 50.3(239) PV(405)
Fibonacci trees 44.1(32)

Fibonacci-P

partitions (and)
Fibonacci numbers 6.4(235) 15.2(166) 18.3(220) 34.4(306) 40.3(287) 41.3(263) 49.4(348) PVII(319)
generalized Fibonacci numbers 6.1(22) 12.4(339) 22.1(1)
Fibonacci partition function 24.2(133)
Fibonacci partitioning of a set 19.5(463)

SUBJECT INDEX
Fibonacci-P

Pascal triangle topics
- Césaro's Fibonacci-Lucas identity 18.3(259)
- Fibonacci
  - lattice paths 13.3(215)
  - numbers (and)
    - hexagons 38.4(299)
    - identities 1.3(21) 2.3(228) 3.4(292) 10.4(405) 40.2(146) 49.1(51)
    - in the mod 2 Pascal triangle 32.2(145) 42.1(38)
    - powers 2.2(93) 2.3(177)
    - variations 3.4(257)
    - with non-integral subscripts 3.2(147)
  - sequences from mod 2 triangles 30.1(35)
  - trees 21.2(118) 24.3(258)
- 4th powers of Fibonacci numbers and identities 2.4(261)
- generalized Fibonacci numbers 4.3(241)

Pell equations (and)
- Fibonacci numbers 13.4(309) 23.3(199) 23.4(300) 32.3(245) 42.4(330) 45.2(98) 50.1(68) 52.3(243) PV(449)
- generalized Fibonacci numbers and Morgando's identity

periodic topics and periods (and, for, of, relating to)
- bracelet 7.3(287)
- Complete Fibonacci sequences 30.4(295)
- Fibonacci entry points 17.1(51)
- Fibonacci function 4.1(37)
- Fibonacci numbers (and)
  - greatest prime factor 48.4(358)
  - in groups 24.4(356)
  - mod
    - 2^n 10.5(519)
    - 3^2 45.1(10)
  - mod
    - 3^4 45.1(10)
    - 3^n 43.1(22)
    - 5^n 10.5(519)
    - L_n 21.4(304)
    - n 12.4(349) 27.1(11) 16.1(86) 16.5(403) 31.4(315) 34.4(332) 44.1(59) PXIII(11)
    - $n > 2$ 14.1(52)
    - p 15.4(353) 40.2(146) 46/47.1(68) 49.3(201)
    - p^n 14.4(343)
  - one row or one column matrices 29.4(310)
  - powers of the period function 18.1(44)
  - quadratic residues 46/47.1(68)
- Fibonacci numbers (and)
  - the periodic point 32.2(167)

periodic topics and periods (and, for, of, relating to)
Fibonacci pseudo
group 16.5(435)
primes mod *p* PIV(277)
generalized Fibonacci numbers
mod
3^n 14.4(343)
m 24.2(138) 16.4(344) 34.2(176)
p 15.2(150)
∞-generalized periodic sequences 42.4(361)
modified Fibonacci numbers 6.2(109)
period 16.4(344) 41.1(48) 52.2(148)
periodic n-point 32.2(167)
periods of
primes in the Fibonacci sequence 45.1(56)
zeroes 4.4(313)
power sequences mod *n* 50.2(175)
(q-r)Fibonacci sequences mod *n* 44.1(59)
quasi-periodic binary sequence PV(429)
random Fibonacci numbers 46/47.4(350) 48.2(175)
rank of apparition mod *n* 1.2(37)
residues of Fibonacci numbers for
any modulo 6.4(275)
mod $n > 2$ 18.1(45)
subsequences 3.4(321)
sums 1.3(33)
permutations and generalized Fibonacci numbers 43.3(234)
polynomials (and)
arrays of coefficients 14.1(30) 16.5(385)
Binet forms 37.3(213)
binomial coefficient triangle 5.4(383)
binomial sums 1.1(16) 5.2(141) 6.5(55)
Catalan numbers 41.1(31)
coefficients 54.2(125)
column generators of arrays of coefficients 14.1(30)
congruences 31.3(194) PXV(211)
continued fractions 15.3(225) 31.4(354) PIII(217)
convolutions 16.5(385) 33.2(174) PVI(105)
derivatives (and derivative sequences)
ordinary 14.1(30) 31.3(194) 32.2(110) 33.2(174) 33.5(453) 34.1(68) 34.5(394) 51.4(351) PIV(99) PVI(215) PVII(115)
partial 33.3(268) 35.1(19) 37.3(213) 38.2(167) 39.2(138) 40.4(352) 43.2(149) 43.4(290) PVI(105)
difference triangles 33.5(441)
divisibility properties 7.5(457) 8.4(407) 12.1(95)
electric networks 37.4(350)
factorization 39.4(309)

polynomials (and)
falling factorial coefficients PXV(211)
Fibonacci numbers 48.3(197)
derivative 31.3(194)
gambler's run problem 20.1(66)
generating functions 1.1(16) 10.6(599) 17.1(58) 29.3(244) MRFS(114)
Ginsburg identities 52.2(141)
graph theoretic models 53.2(135)
heights function 5.2(141)
Hessenberg's matrix 51.1(63)
hyperbolic functions 1.1(16) 11.3(271)
identities 17.1(18) 31.3(194) 53.2(135)
integrals (and integration sequences) 14.1(30) PV(317)
inverse relations 51.1(55)
Lucas numbers 48.3(197) MRFS(114)
null space and matrices 40.4(323)
other polynomials
Chebyshev of the 2nd kind 17.1(18,37) 18.4(353) 22.1(61) 46/47.1(56)
Fibopolyomials PXV(77)
Gegenbauer 3.2(101)
Gegenbauer-Humbert PV(367)
Jacobsthal 16.5(385)
Lucas 10.5(555)
Morgan-Voyce 12.2(147) PVII(161)
Pell 26.1(20) PXIII(345)
Vieta-Fibonacci 40.3(223)
quotients 33.2(153)
reciprocal sums 23.3(238) 16.5(385) 24.1(17)
recurrence relations 37.3(213) 45.3(208)
related to
rising diagonals 12.3(263) 38.5(451)
roots 11.3(271) 13.4(312) 35.2(160)
sums (of)
general 8.4(407) 10.6(599) 13.2(161) 17.2(147) 23.3(238) 31.3(194) 53.2(135)
powers PXV(77)
products 40.4(314)
the number of integers in a Kentucky decomposition of integers PXVI/52.5(68)
triangles
Fibonacci polynomial 8.4(407)
Pascal 10.6(599) PI(229)
trinomial 12.1(47)
types
abstract Fibonacci polynomials 41.1(31)
bivariate 35.1(19) 50.1(27)
complex 20.3(219)
cyclotomic 18.2(108) 37.3(240) PI(81)
Fibonacci cyclotomic polynomials 37.3(240)

polynomials (and)
types
Fibotomic 39.4(309)
generalized (and)
arithmetic functions 38.2(167)
Binet forms MRFS(54)
Chebyshev polynomials of the 1st and 2nd kind 16.2(130)
convolution 27.3(209) 29.4(322) 40.4(352) PIII(273)
DFF triangles 43.4(359)
diagonal polynomials 37.3(213)
Diophantine equations 16.2(130)
divisibility properties 12.1(95) 12.2(113) 14.4(369) MRFS(54)
elliptic geometry 43.2(149)
Fibonacci numbers 31.4(307)
generalized (and)
1st kind 45.3(208)
Gegenbauer polynomials 25.4(300)
Horadam and ordinary derivatives PVI(215)
identities 34.1(68)
Lucas numbers 31.4(307)
negative binomials distribution 27.3(209) 29.4(322) PIII(273)
Pascal triangles 14.5(461) 17.1(58)
potential function 33.3(268)
probability 23.2(100) PII(89) PIII(273) PVII(29)
q-Fibonacci PXVI/52.5(117)
Q matrix MRFS(54)
roots 34.4(320)
2nd kind 45.3(208) 48.4(327)
sums 45.3(208)
triangles of coefficients 32.5(445) 33.4(341)
two variables 14.4(369) 14.5(461) 33.3(268) 37.3(213) 45.1(26) 46/47.1(56)
j and Fibonacci j-numbers 35.3(206)
Lah numbers 6.5(93)
longest success runs 23.4(338) PI(203) PVII(29) PI(203) PIII(281) PVII(29)
q-Fibonacci
Carlitz's 41.1(31)
identities 13.2(97) 41.1(31)
Lah-type relationships 6.2(127)
permutations 43.3(234)
recurrence relations 6.2(127)
sums 13.2(97) 45.1(26)
q-Gaussian coefficients 48.1(29)
self-fusion 52.3(195)
Vieta-Fibonacci 40.3(223) 41.3(240)

SUBJECT INDEX
Fibonacci-P

polynomials (and)
Fibonacci-like polynomials and
differential equations 35.4(361)
identities 32.1(22)
various definitions 28.2(175)
prime number topics
conditions that sums or differences of Fibonacci numbers are never prime 21.2(87)
divisors of Fibonacci numbers 2.2(139) 4.3(217) 50.3(207)
Fibonacci numbers (and)
as a product of primes + n^2 21.4(266)
congruences 15.2(167)
F_{81839} is prime 39.4(351)
prime numbers 40.5(435) 38.1(71) 45.1(56)
primes of the form $4n + 1$ 32.1(15) 44.3(249)
primitive roots of primes 10.2(163)
generalized Fibonacci recurrence with tow variables 13.2(107)
greatest prime factor of a Fibonacci number 48.4(358) PXIII(139)
in generalized sequences 53.1(2)
least integer having *p* Fibonacci representations 40.3(260)
non-Fibonacci numbers PXI(137)
periods in the Fibonacci sequence 44.1(59) 46/47.1(68)
prime factorization of a Fibonacci number PXV(5)
primes and pseudo primes and Fibonacci numbers 8.1(49)
rank of apparition in the Fibonacci sequence 15.4(346)
residues of Fibonaaci numbers mod *p* PXI(77)
sum and difference of two Fibonacci numbers 2.4(317)
tests for primality of Fibonacci numbers 26.4(296) 33.3(258) 36.3(222)
probability topics
Benford's Law and Fibonacci numbers 11.5(490) 14.1(13) 22.2(105)
Bernoulli experiments and Fibonacci
-like polynomials 23.2(100)
numbers 17.1(23)
bivariate distribution 41.4(290)
coefficients in a Fibonacci power sum 42.3(202)
coin tossing 11.5(517) 16.6(539) 21.4(242)
digits 34.4(325,349) 36.4(305) PXIV(25)
experiments with random Fibonacci sequences 33.2(164)
Ferguson's Fibonacci formula 42.3(266)
Fibonacci (and)
fractals PVII(221)
killer 32.5(389)
moments 49.1(76)
number of consecutive successes in an experiment 20.1(28)

SUBJECT INDEX

Fibonacci-P

probability topics
- Fibonacci (and)
  - numbers (and)
    - central limit theorem 33.2(147)
    - Markov chains 5.2(179) 37.1(34) 40.5(453)
    - random variation 23.2(169)
    - weighted sums 41.4(360)
  - probability function 11.5(517)
  - random walks 17.3(275)
  - trees 26.2(135) PIII(155) PVII(145)
- Markov chains and generalized Fibonacci numbers 37.1(34) 40.5(453)

pulsated sequences PXVI/52.5(22)

Fibonacci-Q

quaternions
- Fibonacci 7.2(201) 7.3(225) 20.1(59) 46/47.4(356)
- generalized Fibonacci 11.5(547)

Fibonacci-R

rank of apparition (appearance, entry point, order of appearance) (and, in)
- Fibonacci sequence
  - basics and properties 1.2(37) 32.2(155)
  - connection with Lucas sequence 15.4(346)
  - equal periods for different moduli 16.1(86)
  - fixed points 50.4(346)
  - generalized and
    - mod *p* 38.3(272)
    - splitting fields 13.3(240)
  - powers of Fibonacci numbers 50.3(239)
  - primitive roots 15.4(347)
  - products of consecutive Fibonacci numbers 50.2(132)
  - pseudo-primes and various parameters PVIII(259)
  - upper bounds for in the Fibonacci sequence 51.3(233)

ratios (of, involving)
- Farey sequences of Fibonacci numbers 13.1(1,31) 13.3(255) 14.5(389)
- Fibonacci numbers 2.4(269) 5.1(99) 13.4(322) 15.2(113) 19.1(1) 26.3(247) PVIII(251)
- $(F_n)^2/d$ 27.3(276)
- Fibonacci and Lucas numbers 2.4(269) 5.1(99)
- generalized Fibonacci numbers 25.2(137) PVII(239)
- generalized Fibonacci and sums of the form $\Sigma F_k/10^{k+1}$ 25.1(72)
- 1/89 model and Fibonacci number variations 23.1(29) 27.5(448) 31.4(346) MRFS(78)
- quadratic Fibonacci 9.4(427)
- quadratic Fibonacci and Lucas numbers 9.4(427)
- summation model: $\Sigma F_k /10^{k+1}$ and variations 25.1(72) 25.2(163) PV(69)
- Zeckendorf representation of F_{mn} / F_n PV(217)

SUBJECT INDEX
Fibonacci-R

reciprocal (sums of)
- catalog of Fibonacci and Lucas sums 24.4(316)
- Fibonacci reciprocal sums of
  - F_n 7.2(143) 9.5(449) 15.1(46,67) 30.2(179) 31.3(246) 46/47.2(153)
  - $\lfloor (F_n)^2 \rfloor$ PVI(355)
  - F_{2n} 10.2(199) 15.4(293)
  - $(F_{2n})^2$ 15.4(293) 24.4(316) 39.3(214)
  - F_{2^n} 12.4(346) 14.3(272) 14.5(453) 15.1(67) 17.2(147) PVII(197)
  - $F_{2^n k}$ 14.5(453) 17.2(147)
  - F_{an+b}+ c 19.1(14) 22.3(261)
  - F_{an+b}+ F_k 19.1(14)
  - $F_{(2n+1)r+k}$ + F_r 22.3(261)
  - $F_{(2n+1)}$ + $L_k/\sqrt{5}$ 29.3(200)
  - F_{n+1}/F_n 31.3(246)
  - finite sums 46/47.2(167)
  - products 7.2(143) 7.2(211) 9.4(402) 9.5(449) 28.3(223) 33.3(194) 41.1(59) 53.4(323) PVIII(277)
  - various powers with various subscripts 32.1(18)
  - Various ratios 46/47.2(153) PVI(355)
- generalized Fibonacci (various notations use; all are "ω" here)
  - ω_n 9.3(299) PXIV(171)
  - ω_{n+3} 1.4(30)
  - ω_{2n} 9.3(299) PXIV(171)
  - finite sums 41.2(152)
  - generating functions 9.3(299)
  - products 9.5(449) 28.3(223) 32.3(284) 35.1(68) 38.4(294) 39.3(214,264) 42.1(66) PXIV(171)

roots
- characteristic equation of
  - ∞-generalized Fibonacci sequences 42.4(361)
  - n^{th} order Fibonacci sequences PV(143) PVIII(165)
- denominators of generating function of Fibonacci numbers 21.1(13)
- equations with F_n as a product of a prime and a square 21.4(266)
- Fibonacci
  - characteristic equation 2.1(67)
  - polynomials 11.3(271) 13.4(312) 35.2(160)
- polynomials with Fibonacci coefficients 21.1(62)
- quadratic equations with Fibonacci coefficients 29.4(343)
- sums of powers of roots of Fibonacci characteristic equations 8.2(221)
- trigonometric for polynomials Fibonacci 20.3(219) 28.2(175)

Fibonacci-S

shift formulas 11.5(523)
shift function PXVI/52.5(168)
special bonus issues of *The Fibonacci Quarterly* (Hoggatt Memorial Issue) 27.3
staircases 53.1(61)
subprime sequences 54.1(55)
sums of products of reciprocals 54.3(24-87-252; listed as 196-203)

tiling (and, for)
chessboards PXVI/52.5(102)
dominoes (and)
6x6 19.3(219)
intersecting and Fibonacci numbers 48.2(114)
Fibonacci identities 46/47.1(73) 46/47.3(249) 48.3(276) PIX(25)
fibonomial identities PIX(19)
phased and Fibonacci identities 38.3(282)
proofs of generalized identities 52.2(121)
topological topics (and)
Fibonacci numbers 11.3(255) 15.3(245) 16.3(195)
Vietoris and Fibonacci numbers 31.2(158)
trees
Fibonacci (and)
asymptotic maximality PVIII(195)
balanced 30.3(244) 40.5(441) PVII(177)
coding 35.4(309) 38.2(127)
complexity PVI(251)
compositions 17.3(253)
convolution 26.4(354)
diagonal in Pascal's triangle mod 2 32.2(145)
drainage patterns 10.6(643)
dying PVII(145)
entropy PIII(155)
generalizations of PIII(37)
graceful 21.3(174)
immortal PVII(377)
infinite PXVI/52.5(136)
k-gons PV(273)
labeled 53.2(152)
mortal PVII(377)
mosaic number of PIII(133)
number 12.4(355) 19.1(28) 20.1(16) 20.2(168) 21.2(118) 26.2(135,152) 26.4(318) 27.3(201) 28.3(230) 43.2(157)
number of Fibonacci trees 44.1(32) 45.3(247)
order 53.2(152)
partitions 29.2(174)
planted plane PI(105)
polynomials mod 2 41.2(156)
rabbits 14.3(277) 15.4(311)
searches PIV(69)
shuffle PVII(9)
Steinhaus tree PIII(325)
t (k)-nary 21.3(219) 24.3(258)
words 33.2(104)
Wythoff array of 53.2(152)
Wythoff pairs 53.2(152)

SUBJECT INDEX

Fibonacci-T

trees
- Fibonacci (and)
  - Wythoff-Zeckendorf PVII(221) PXIII(257)
- multinacci PIII(37) PXVI/52.5(136)
- spanning (and)
  - Fibonacci numbers12.3(259) 15.1(11)

triangles
- difference 33.5(441)
- Fibonacci numbers 10.6(599) 11.2(131) 11.5(469,511) PIII(129)
- Fibonacci (& variations) 9.4(413) 10.4(355) 10.5(555) 14.2(173) 15.4(319) 32.2(111) 36.3(194) 40.5(405)48.2(168) PIII(129) PVI(521) PVIII(307)
- generalized Fibonacci numbers 8.2(158)
- gibonacci PXII(169)
- quadranacci 15.4(319)
- with Fibonacci coordinates in 2-dimensional rectangular coordinates 5.1(87)

Tribonacci Topics (see under T)

Fibonacci-V

vectors (and)
- Fibonacci numbers 45.2(171)

Viète
- Fibonacci array 40.3(223)

Fibonacci-W

words 53.2(152)

Wythoff
- array
  - Fibonacci sequences 50.3(207)
- pairs (and)
  - Fibonacci
    - composition array 20.2(122)
    - numbers 20.4(289) 22.1(2)
    - representations 14.4(380) 15.1(85) 16.2(147) 17.4(306) 23.4(308)
    - Words 27.1(76) 30.3(199)
  - sonification of Fibonacci type sequences PXV(175)

Fibonacci-Z

Z-transform of generalized Fibonacci numbers 36.3(211)

Zeckendorf (representations [and], theorem [and])
- completeness of the Fibonacci sequence PIV(167)
- decompositions (and, for)
  - Fibonacci products 36.3(240)
- Fibonacci number representations 6.4(193) 10.1(1) 10.6(635) 11.3(317) 15.3(237) 26.2(152) 26.3(256) 34.4(306) 39.1(75) 41.2(169) PXI(23)
- Fibonacci trees 26.4(318) 28.3(230)
- generalized Fibonacci number representations 7.5(494)

Zeckendorf (representations [and], theorem [and])
representations (using)
negative Fibonacci numbers 30.2(111)
number using
Fibonacci numbers 37.1(47) 46/47.2(103) PVII(39) PXII(53)
Fibonacci numbers and subscripts from Zeckendorf representations 39.3(250)
powers of Fibonacci numbers PXII(107)
squares of Fibonacci numbers 27.3(276)

G

game theory 8.3(225) 17.3(250) 18.4(300) 20.1(51) 25.2(174) 26.2(141) 26.3(195) 28.3(259) 28.4(302) 32.1(22)
Gap topics 51.1(13)
Gauss
map 43.3(243)
triangular number theorem 40.4(365)
generacci sequence decompositions of integers PXVI/52.5(68)
generating functions (and, for)
bilinear 1.2(1)
Blissard 18.3(226)
chessboards PIX(101)
exponential (and, for)
differential equations 1.2(69)
expected value 41.4(360)
functions with composite coefficients 15.3(269)
Hurwitz series 32.1(79)
numbers
Bernoulli 48.4(290) PV(355) PIX(1,121)
C 28.4(321)
Euler 48.4(290)
Eulerian PIX(121)
Genocchi 48.4(290) PIX(121)
Lah 28.4(321)
negative-positive Stirling numbers of the 1st and 2nd kind 34.3(213)
Nörlund 46/47.2(140)
poly-Cauchy of the 1st and 2nd kind PXV(99)
Stirling 1st kind 46/47.2(140)
Stirling 2nd kind 28.4(321)
polynomials
Bell differential PVII(353)
Bernoulli 7.4(359) 34.3(244) PIX(1)
Euler 7.4(359) 34.3(244) 48.4(290)
Eulerian 41.1(23)
Genocchi 34.3(244)
Hermite 7.4(359) 12.2(179)
poly-Bernoulli PXV(99)
r-q 28.4(321)

SUBJECT INDEX
G

generating functions (and, for)
- exponential (and, for)
  - quotient of cosh x and cos x 10.4(349)
  - sequences
    - arbitrary 7.4(359)
    - defined by its generating function 7.4(341)
  - sums of powers of integers 34.3(244) 36.5(435)
- far-difference representations by k-skipponacci nrs 52.3(243)
- integer equation PVII(93)
- moment generating function for the geometric distribution 31.2(178)
- ordinary (and, for)
  - basics 5.5(445)
  - central values in Pascal triangles 17.1(58)
  - preservative matrix column sequences 42.3(205)
  - compositions 20.2(132)
  - cyclic strings 35.3(240)
  - functions with composite coefficients 15.3(269)
  - general multisection generating function identities 13.2(103)
  - Meixner-Weisner 19.5(422)
  - multisection 11.1(85)
  - number of complete partitions of *n* 36.4(354)
  - numbers
    - balancing 37.2(98)
    - Bernoulli PV(355)
    - Bernoulli 2nd kind 46/47.2(140) PV(355)
    - Catalan 31.2(121)
    - generalized Stirling of the 2nd kind 5.4(356)
    - gibonomial coefficients 53.4(340)
    - Stirling 1st 46/47.2(140)
  - partially ordered partitions 10.2(157)
  - polynomials
    - and diagonal sums in a triangle 7.4(437)
    - Bernoulli 1.2(1)
    - Brahmagupta 40.2(161)
    - Chebyshev 1st and 2nd kind PXII(285)
    - Euler 1.2(1)
    - Fermat 31.2(152)
    - generalized Morgan-Voyce 36.5(391)
    - Hermite 20.2(132)
    - Jacobi 7.4(359) 13.2(129)
    - Jacobsthal derivative sequences 35.4(352)
    - Jacobsthal-Lucas derivative sequences 35.4(352)
    - Jordan PV(355)
    - Legendre 7.4(359)
    - Morgan-Voyce PVII(161)
    - with integral coefficients 13.2(129)

SUBJECT INDEX
G

generating functions (and, for)
- ordinary (and, for)
  - powers of the generating function for Catalan numbers 38.5(408) 40.4(299)
  - probability functions PV(103)
  - sequences
    - arbitrary 7.4(359)
    - binomial sums PXII(35)
    - Catalan moment PXIII(187)
    - common to five involving binomial coefficients 48.1(4)
    - defined by a generating function 10.2(169)
    - from
      - Catalan convolution array 16.4(289)
      - convolutions matrices PIX(289)
      - Pascal triangles 11.1(85)
      - Riordan matrices 31.2(121)
      - rows in Delannoy triangles PXII(285)
    - intertwined 2nd order linear recurrence 43.4(316)
    - linear divisibility 18.3(193)
    - linear recurrence 19.2(106) 27.2(131) 27.3(283) 34.3(257) 36.1(3) PXII(285)
    - powers of
      - general 12.4(348) 29.4(329)
      - powers of 2nd order linear recurrence 41.4(321)
    - reciprocal polynomial 18.3(193)
    - related to coin tossing 49.3(249)
  - strange 15.2(161)
  - Young graphs 52.2(99)
- Pascal-de-Moivre generating functions PVIII(103)
- satisfying a quadratic equation with polynomial coefficients 52.4(349)

geometry
- angles 8.4(393) 21.2(107)
- area 30.3(263) MRFS(43)
- cardioids 36.1(45)
- circles 11.5(541) 12.1(65) 12.4(326) 18.1(33) 19.2(153,160) 21.4(250) 22.3(247,270) 22.4(324) 27.1(18) 27.4(310) 28.3(204) 29.3(235) PIII(101) PXI(109,235) PXI(199)
- coloring PVI(31) 46/47.1(10) PXIII(237)
- conics
  - ellipse 12.1(38) 14.5(388) 36.1(45) 43.2(149)
  - general 20.2(164) 22.1(22) 33.1(59) 35.3(248) 38.5(446)
  - hyperbola 13.3(263) 16.1(37) 19.2(153) 29.3(235) 30.3(216) 44.4(341)50.1(51) PXI(233)
  - parabola 44.4(341)
- constructions 9.2(199) PIX(235,247)
- coordinate 24.4(366) 27.3(221) 31.3(239)
- coset diagrams 42.1(20)
- cubes (Cuboids) 2.3(184) 7.1(73) 23.2(153) 26.1(54) 26.4(338) 32.3(266)50.1(19) PVII(153)

SUBJECT INDEX
G

geometry
- cylinders 35.4(335) PXIV(11)
- elliptic curves PV(245) 40.5(460) 44.1(59) 51.2(112) PXIV(1)
- flexagons PXIV(59)
- fractals 31.1(73) 31.2(112) 35.3(206) 41.1(63) PVII(221)
- gaps PI(293) PIII(325)
- Gnomons 19.1(35)
- goldpoint 41.1(63) PIX(235)
- golden shapes 22.3(252) 35.3(194) 49.3(267)
- hexagon 38.4(299) 45.3(194) PVII(23,435)
- icosahedron 50.2(144)
- Lewis Carroll's paradox PXI(233)
- lines 10.4(435,439) 11.2(201) 12.1(67) 20.2(146) PIX(235,247)
- Mobius strips PXIV(11)
- n-cubes PIX(177)
- octahedron 50.2(144)
- orbits 51.1(28)
- pentagons 12.3(235) 29.2(103) 41.1(63)
- pentagrams 41.1(63)
- planes 12.1(67) PVII(435)
- Platonic solids 50.2(144)
- polyhedra 9.2(146) 10.4(435) PV(393)
- polygons 1.3(60) 3.1(57) 10.4(423) 18.3(229) 19.2(153) 19.5(437) 32.2(160) 38.1(49) PIII(15) PIV(127) PVI(297) PVII(1,435) PVIII(353) PIX(247) PXII(203)
- polytope 54.3(253)
- pyramids 6.1(85) 16.4(335) 20.4(343) MRFS(58) PVIII(11)
- quadrilaterals PXI(109)
- rectangles and squares 1.3(66) 2.2(104) 2.3(215) 2.4(318) 3.3(227) 4.2(168) 5.5(424) 6.6(390) 7.1(73) 10.3(303) 11.5(539) 12.1(92) 13.1(45) 13.2(137) 13.4(345) 14.2(144) 20.2(146) 25.2(118) 32.5(386) 50.1(19)51.4(348) PVIII(11) PIX(235) PXIV(11)
- rhombus 50.2(163)
- spirals 14.2(144) 25.2(118)
- star (and star of David 2.3(161) 4.1(70) 9.4(337) 13.1(70) 30.3(251) 32.2(160) 38.3(194) 45.3(194) 48.4(312) 49.1(10) 50.2(163) 53.4(340) MRFS(124) PVI(23,31) PIV(9,37,219) PVII(23) PVIII(1,11)
- surfaces
  - hyper 24.3(221,227)
  - Quadric 19.2(153) 19.3(214)
- tetrahedron 50.2(144)
- tiling 36.1(45) PVIII(11) 38.3(282) 43.3(256)
- torus 48.2(137)
- triangles (also see under golden number geometry and Pythagorean topics)
  - almost isosceles 36.4(319) PIV(41)
  - area 38.2(98)
  - celestial right 8.5(522)
  - general F- 38.2(98)
  - Great Pyramid of Gizeh 16.4(335)

SUBJECT INDEX

G

geometry
- triangles (also see under golden number geometry and Pythagorean topics)
  - Heronian 5.5(484)
  - Hero's formula 38.2(98)
  - integral
    - diameters of incircles and circumcircles 27.4(310)
    - group of 27.5(458)
    - primitive 29.1(3)
    - sides and area 11.1(27)
  - minimum perimeter circumscribing a semicircle 30.3(274)
  - shaped fractals 35.3(206) PIX(43)
  - transformations PIX(247)

Girard-Waring formula PXIII(55)
gold point topics PIX(235) PV(1) PVIII(11)
golden (number, ratio, section) (and, relating to)
- applications
  - art 14.5(406)
  - chemistry 1.4(61) 5.2(193) 6.4(244) 9.1(82)
  - electrical networks 9.2(188)
  - human anatomy 17.4(340)
  - music PXIII(127)
  - solar system 22.1(70)
  - system harmony PVII(393)
  - time 21.2(107)
- approximations 37.2(178) 45.1(35)
- arctangent identities 52.2(129)
- associativity 2.3(203)
- asymptotic behavior 34.3(224)
- BBP-formulas 52.2(129)
- Beatty sequence 49.2(151) 53.3(230)
- binomial sums 53.1(42,72)
- binomial sums for nth order golden numbers 52.4(307)
- bracket function 17.4(306) 29.2(157) 29.3(194)
- circular functions 8.4(371)
- continued fraction 23.2(155) PV(1)
- convergence of sums 52.4(307)
- convergents 23.2(155) 25.2(171) 37.2(178) 46/47.4(298)
- cutting property 49.3(267)
- divisibility PVIII(149)
- division algorithm 46/47.3(249)
- eignevalues of a matrix PXIII(211)
- evaluated to 4599 decimal places 4.2(157)
- extended Zeckendorf representations PXVI/52.5(15)
- fast Fourier transform 34.4(323)
- fibbinary nrs 52.1(61)
- Fibonacci trees 53.2(152)
- functions 22.3(252)

SUBJECT INDEX
G

golden (number, ratio, section) (and, relating to)
- generalizations 20.2(146) 34.3(200) 34.4(320) 44.4(335) 52.3(218) 52.4(307) 53.1(74) PVII(463)
- geometry
  - area of plane figures 12.1(65)
  - circles 25.2(118) 27.1(18) PI(293)
  - cuboids 2.3(184) 7.1(73) 23.2(153) 50.2(144) 49.3(267)
  - ellipse 12.1(38) 14.5(388)
  - lines 10.4(439) 11.2(204) 25.2(118) 35.3(194) 49.3(267)
  - rectangles 1.3(66) 2.2(104) 3.3(227) 7.1(73) 8.5(522) 25.2(118) 33.4(298) 49.3(267) MRFS(31)
  - solids 50.2(144)
  - spirals 25.2(118)
  - squares PVIII(11)
  - staircase 35.3(194)
  - tiling 33.4(298) PVIII(11)
  - triangles 1.3(66) 2.2(104) 3.2(135) 7.1(73) 11.2(195) 11.2(204) 20.2(159) 32.3(232) PIV(171) PVIII(11)
- higher
  - dimensions 49.3(267)
  - order 31.4(354)
- history 11.2(195) 20.2(146) 24.4(382)
- logarithmic function of the golden number 52.4(357)
- maps
  - Baker's 34.5(423)
  - triangular 34.5(423)
- mean PV(1) PIX(247)
- metric paper 15.3(220)
- modified 25.2(118)
- modified bessel functions 15.2(112)
- natural logarithm of 34.2(129)
- nearly golden section 38.2(174)
- nested
  - cuboid sequences 23.2(153)
  - rectangles 5.2(175)
- Noem ratio 20.2(146)
- π and
  - binomial sums 53.1(42)
  - reciprocals of the golden number 44.2(141) 46/47.1(32) PXII(17)
- Plato's divided line 8.5(522)
- powers 1.3(53) 4.2(163) 8.5(522) 15.3(207) 46/47.3(249) PVIII(149) PXV(255)
- powers of a golden linear polynomial 49.4(355)
- proof of irrationality 13.1(32) 13.3(198)
- quintic equation PVIII(95)
- quitting probabilities 53.2(130)

SUBJECT INDEX
G

golden (number, ratio, section) (and, relating to)
- representation of
  - integers 17.4(306) 29.2(157)
  - real numbers 48.2(150)
- roots of polynomial equations 31.4(354)
- searches 10.4(422) 19.5(406)
- sequence
  - of golden numbers 52.1(66) PIII(325)
  - of matrices 14.5(419)
  - using bracket functions 29.2(157) 29.3(194)
- square root of 31.1(7)
- strings 48.2(168) 52.4(331) PIII(325)
- tenth root of 24.4(323)
- transcendental numbers 15.1(15)
- unit pentagon distance set PV(279)
- words 38.5(432)
- Wythoff pairs 18.1(28)
- Zeckendorf representations 29.3(217)

graphs (and, concerning graph theory topics)
- algebraic structure count 45.1(3)
- arcs 35.4(346)
- benzenoid 45.1(3)
- binomial 35.1(48)
- bipartite 25.3(250) 35.1(75)
- Collatz 40.1(43)
- complete grid graph 32.1(69)
- cycles in doubling diagrams mod *m* 32.1(74)
- digraphs (and)
  - associated of a matrix 30.1(2)
  - counting paths in 23.1(3)
  - from posers mod *p* 34.3(226)
  - function of quadratic maps mod *p* 39.1(32)
  - power mod *n* 36.3(229) 50.3(196)
  - random quasi-quadratic function 39.1(32)
- directed (and)
  - mod *n* 35.4(346)
  - of a matrix 45.1(39) PXII(27)
  - prime number maze 40.3(272)
  - 3x + 1 problem 40.1(43)
  - tilings PXIII(153)
- distance sets PV(279)
- double jumps in 35.4(318)
- edges
  - in digraphs mod *m* 30.4(322)
  - related to Pythagorean triples 31.3(276)
- graphical representations of equations PIII(63)
- grid 42.3(222)

SUBJECT INDEX
G

graphs (and, concerning graph theory topics)
- independent set of verticies 53.3(237)
- iteration 45.3(239)
- *k*-matching in spanning subgraphs 24.3(238)
- long and short segment 34.5(423)
- loops and tournaments 46/47.3(241)
- Mosaic PIII(123) PIV(127)
- *n*-bit strings in hypercubes 28.2(121)
- number of spanning trees in the square of a cycle 23.3(258)
- outerplanar 19.1(28) 27.3(247) 36.3(206) 51.2(147)
- parity transition PV(569)
- Pascal 21.3(203) 24.3(251)
- paths
  - in connected graphs 53.2(135)
  - Knight tours 16.3(276)
- perfect matching of a graph 45.1(3)
- Petersen 44.4(362)
- Q-matrix 53.2(135)
- recontres 25.3(250)
- self-similar 31.1(65)
- spanning paths 52.1(46)
- standard star-shaped 33.3(258)
- star-like ladders 39.3(211)
- trellis PXII(245)
- triangle-free edge-chromatic 22.3(235)
- trivalent 51.4(330)
- unions of 42.3(222)
- walks 53.3(218)
- wheel 1.4(355) 51.3(259)
- Young 52.2(99)

greatest common divisor (GCD) (and, for)
- algorithms
  - addition 8.4(347)
  - Daykin's 12.1(80)
  - Daykin's 12.1(80)
  - Euclidean
    - number of divisors needed 7.4(337) 11.5(508)
    - pseudo-division for polynomials 31.4(325)
    - trees PIV(257)
  - golden number
    - number of divisors needed 8.1(104)
  - least absolute value 8.1(102)
    - number of divisors needed 11.5(508)
- binomial coefficients 10.6(579) 11.1(25) 11.3(282) 33.5(386) PIV(9)
- duality between Pascal's triangle and pyramid 43.1(15)
- elliptic curves 44.1(59)
- for $(3^n - 1, 2^n - 3)$ 43.1(15)

SUBJECT INDEX
G

greatest common divisor (GCD) (and, for)
- GCD
  - closed sets 30.2(157)
  - matrices 30.2(157)
  - Hermite theorem for binomial coefficients 33.5(386)
  - power matrices 34.4(290)
- in
  - Euclidean rings 19.5(440)
  - Hosoya's triangle 50.2(163)
  - Lehmer number sequences 29.1(24)
  - octagons PVI(297)
  - Pascal's pyramid PIII(7) PV(37)
  - Pascal's triangle 38.3(194) PII(61) PV(11)
- invariance for translation and rotation PIII(15)
- Lamé's theorem 8.1(104)
- multinomial coefficients PIV(9)
- numbers without ones 30.1(48)
- prime number construction formulas 30.3(194)
- ratio of certain gcd's to lcm's 23.3(265)
- reciprocal GCD matrices 29.3(271)
- 2nd order recurrence sequences 16.6(541) 17.1(13) 23.2(126)
- Star of David Theorem 30.3(251) 32.2(160) 45.3(194) 48.4(312) 53.4(340) PVII(23)
- strong divisibility sequences 35.1(9) 36.5(434) PVIII (1)
- 3rd order recurrence sequences 26.4(366)
- unitary divisors of *n* 25.4(333)

greedy odd Egyptian fraction algorithm 39.3(221) 48.3(202)

groups (and, concerning)
- Abelian (and)
  - recurrence relations 8.3(255)
  - varieties 42.3(256)
- Burnside's theorem 35.1(3)
- embedding a group in
  - a ring 13.1(50)
  - powers of *p* 16.1(4)
- finite (and, of)
  - Chevalley 39.4(320)
  - nilpotent and Fourier sums and integrals PV(49)
  - recurrences 39.4(290) 44.2(103) PV(61)
- generated by squares semi group and Fib trees 17.3(241)
- group theory proof of $x^2 \equiv 1 \bmod n$ 11.2(161)
  - extended to a residue system 13.4(329)
- groups (of, types)
  - congruence class mod *n* 46/47.2(115)
  - cyclic group and
    - Circular seating 33.4(368)
    - random walks 39.4(290)
  - dicyclic 17.3(241)

SUBJECT INDEX
G

groups (and, concerning)
- groups (of, types)
  - dihedral PIII(27) PIX(69)
  - elliptic curve 44.1(59) PVII(295) PXIII(301)
  - Galois (and, of)
    - algebraic numbers 12.3(271)
    - invariants 19.2(147)
  - generator PIII(27)
  - homology MRFS(48)
  - integral triangles 27.5(458)
  - linear fractional transformations 42.1(20)
  - modular (of)
    - integers PVI(487)
    - matrices PXII(115)
    - number tree PVI(487) PXII(115)
  - monic polynomials 45.1(56)
  - multiplicative (and, of, concerning)
    - generated by Lehmer numbers 41.2(122)
    - public key cryptosystems PIX(263)
    - recurrences 12.4(365)
    - Selberg functions 44.2(109)
  - Nottingham PXIII(187)
  - parachutes 30.1(54)
  - polyhedral PXI(95)
  - quaternion PIII(27)
  - Riordan 31.2(121) 36.4(339) 43.2(170)
  - residues mod *n* 15.2(145)
  - S- 17.3(241)
  - sub groups of
    - cyclic of integers 10.3(225)
    - linear recurrence sequences in a complex field 41.5(397)
    - Sylow 17.3(241)
    - vertex sets from a graph 34.3(226)
- infinite group of matrices 46/47.4(350)
- laws and universal Bernoulli numbers 44.4(347)
- powers and roots in special linear groups 27.5(386)
- semi groups and
  - integers 10.3(225)
  - number sequences PV(77)
- structure and
  - binomial transform 36.3(287)
  - 2nd order linear recurrences PVI(47)
- 3x + 1 problem 46/47.2(115)

SUBJECT INDEX

H

Hamming weight of a binary sequence 44.3(216)
Hansel's lemma 41.2(156)
Hausdorf moment problem 39.1(5)
Heron's approximation method 45.1(35)
Hilbert's tenth problem 37.3(258) 46/47.2(135)
historical/biographical topics
- mathematical and related
  - binomial coefficients 49.1(10) 33.5(415)
  - Chebyshev approximation 31.3(205)
  - congruence number problem 49.4(330)
  - Diophantine equations 48.1(39)
  - Diophantine *m*-tuples PXVI/52.5(212)
  - extended binomial coefficients 33.5(415)
  - fractals PIX(43)
  - golden ratio 11.2(195) 20.2(146) 24.4(382) 31.1(7) PVII(393)
  - Greek mathematics 50.4(313)
  - Jacobsthal numbers 34.1(40)
  - Mersenne primes 37.4(367) 46/47.3(194) PXI(137)
  - Morgan-Voyce polynomials PVII(161)
  - palindromes 42.1(76)
  - Pascal's triangle 42.1(38) PXV(235)
  - Pell equations 7.2(181)
  - periodic representation of algebraic numbers 50.3(252)
  - plastic number 50.4(313)
  - Platonic solids 50.2(144)
  - primality tests PXIII(301)
  - Pythagorean
    - quadrilaterals PIX(109)
    - theorem PIX(247)
    - triples PIV(247)
  - solved and unsolved problems 16.4(370)
- miscellaneous
  - Bode's problem 16.6(530)
  - flexagons PXIV(59)
  - Fibonacci in music PXIII(127)
  - Gauss on primes PXIII(301)
  - Julia's snowflake PIII(15)
  - Minoan architecture 6.6(370)
  - naming Popes 25.1(57)
  - snippets of historical information 28.1(90) 37.2(135) 49.3(195) 49.4(334) 51.3(218)
  - The Fibonacci Association PXVI/52.5(1)
  - various discoveries 9.2(163)
- people
  - Archimedes 19.3(214)
  - Chebyshev, Pafnuty Lvovich 31.3(205)
  - Freitag, Herta Taussig 34.5(467)

SUBJECT INDEX
H

historical/biographical topics
- people
  - Hippocrates of Chios 50.4(313)
  - Hoggatt, Jr., Vern 19.3(193) PIX(xxix)
  - Horadam, Alwyn F. 25.2(100)
  - Josephus, Flavius 14.1(48
  - Lucas, Edouard 30.4(314)
  - Oresme, Nicole 12.3(267)
  - Plato 10.4(435)
  - Pythagoras 36.4(323)
  - Simson, Robert 32.2(130)
  - Vine, Richard 35.1(10)
  - Zeckendorf, Edouard 36.5(416) 37.1(33)
- places
  - San Lorenzo Church library in Florence 40.5(405)
  - Great Pyramid of Giza 6.1(85)
  - Taj Mahal 6.5(43)
- publications
  - *Liber Abaci* 24.1(70) 42.1(82)
  - *Liber Quadratorum* PIV(247)
  - OEIS PXV(219)
  - *The Fibonacci Quarterly* PXVI/52.5(1)

Horadam generalized Fibonacci sequences (and)
- Aiken transformation 36.1(68)
- asymptotic properties 22.3(239)
- Binet formula 20.2(164) 31.2(166) 32.5(424) 35.1(57) 36.5(452) 37.2(162) PV(465)
- Catalan's identity 33.1(82) 37.2(162)
- circulants MRFS(48)
- complex number sequence 51.1(28) 51.4(339)
- congruences 32.5(424) 33.2(126) 35.3(265)
- continued fractions 26.3(219) 29.1(57)
- determinants sequences MRFS(48)
- Diophantine equations 36.2(125)
- divisibility 14.2(153) 51.3(194)
- D'Ocagne
  - identity 37.2(162)
  - property of 38.5(446)
- exponential generating functions PV(465)
- function 50.4(304)
- functions
  - arithmetic
    - arithmetic progressions 28.4(363)
    - Chebyshev 7.1(14)
    - geometric progressions 28.4(363)
    - Liouville 28.4(363)
    - multiplicative 28.4(363)
    - quasimultiplicative 28.4(363)

SUBJECT INDEX

H

Horadam generalized Fibonacci sequences (and)
- functions
  - Carlitz 31.2(105)
  - Chebyshev 7.1(14)
  - generalized circular PV(465)
  - hyperbolic 33.1(82)
  - Lucas 3.4(241)
  - trigonometric 33.1(82)
- general order 12.3(237,281)
- generalized 29.4(304) 31.2(166)
- generalized binomial coefficients PV(507)
- generalized Q matrix 12.4(381) 33.1(64) 35.4(329)
- generating functions
- exponential PV(465)
  - ordinary
    - powers 12.4(348)
    - products 40.4(358)
- geometric loci from simson's formula 20.2(164) 22.1(22) 22.3(247)
- ideal elements 17.4(347)
- identities
  - arithmetic progressions 26.1(20)
  - basic 3.3(161) 25.3(268) 35.1(57)
  - binomial sums 9.4(357)
  - Fermat numbers 26.1(20)
  - fundamental 3.3(161) 3.4(241) 10.4(397) 12.4(381) 13.3(279) 15.2(97) 17.3(248) 25.3(268) 31.2(105) 33.1(64) 35.3(265) 35.4(329) 36.1(68) 36.4(295)36.5(452) 37.2(162) 38.5(420) 40.4(358) 41.1(80)
  - Gaussian integers 26.1(20)
  - generalized Q matrices 12.4(381) 33.1(64) 35.4(329)
  - generating functions 26.1(14) 40.4(358)
  - geometric progressions 26.1(20)
  - n^{th} order 12.3(281)
  - recurrence relations 31.2(105) 37.2(162)
  - summation 3.3(161) 3.4(241) 7.1(92) 9.4(357) 12.4(381) 15.2(97) 17.3(248) 26.1(14,20) 25.3(268) 31.2(105) 33.1(64) 35.1(57) 35.3(265) 36.4(295,327) 36.5(452) 40.4(358) 40.5(394)
- Lambert series 26.2(98) 28.3(223)
- Lehmer sequence 51.3(194)
- matrices 35.4(329)
- negative subscripts 36.4(295)
- partitions 12.4(339) 17.4(349)
- periodicity 11.2(163)
- periods and
  - complex Horadam numbers 51.1(28) 51.4(339)
  - residues 34.5(440)

SUBJECT INDEX

H

Horadam generalized Fibonacci sequences (and)
polynomials 35.4(329) PVI(201,215)
Chebyshev 7.1(14) PVI(355)
powers and products 13.3(279) 40.4(358) 52.2(172)
prime numbers 20.4(311)
Pythagorean property 5.5(424)
Pythagorean triples 9.3(307) 12.4(327) 20.2(121)
recurrence relations (and, for)
algorithm 37.2(162)
Carlitz functions 31.2(105)
functional 17.4(294)
Gaussian integers 26.1(20)
intersections 21.1(6)
lacunary 17.4(294)
power-product 51.2(174) 52.2(175)
q-series 17.4(294)
universal 37.2(162)
Simson's identity 37.2(162)
special case sequences
Bell numbers PIII(299)
Chebyshev polynomials 7.1(14) 3.4(241)
combinatorial functions 7.1(14)
Fermat 5.5(424) 20.2(164) 26.2(98) 28.4(363)
Fermat-Lucas 26.2(98)
Fibonacci numbers3.3(161) 3.4(241) 7.1(92) 10.4(397) 12.4(339) 17.4(294) 24.1(17)25.3(268) 26.2(98) 28.3(223) 28.4(363) 29.1(57) 31.2(166) 33.2(126) 36.4(295) 41.1(80) PV(465) PVI(355)
Lucas
numbers 3.3(161) 7.1(92) 12.4(339) 17.4(294) 24.1(17)25.3(268) 26.2(98) 28.3(223) 29.1(57) 31.2(166) 33.2(126) 36.4(295) 41.1(80) PIII(299)
Pell 5.5(424) 12.4(339) 20.2(164) 22.4(324) 26.2(98) 28.3(223) 28.4(363) 28.4(363) 29.1(57) 31.2(166) 36.4(295)
Pell-Lucas 22.4(324) 26.2(98) 28.3(223) 31.2(166) 36.4(295)
staggered sequences 29.1(47)
with large initial conditions 29.1(30)
Hörner diagram for a polynomial 40.5(386)

I

identities (and)
algebraic PXV(271) PXVI/52.5(91) 54.2(154)
Andre-Jennin polynomials 38.2(114)
arithmetic 12.3(271) 14.1(12) 15.3(254) 25.1(62)
balancing numbers PXI(185)
Bell MRFS(69)
Bernoulli 36.4(329) 42.4(295) 43.3(208) 45.2(146) 46/47.2(140) 46/47.3(225)

SUBJECT INDEX
I

identities (and)
- algebraic 54.1(31)
- Aurifeuille 54.1(19)
- binomial coefficient (and, concerning, for, of)
  - blockwalking 34.3(280)
  - formal 28.3(252)
  - generalized PIX(187)
  - integrals PXII(57)
  - Knuth identity PXIII(109)
  - method of least squares 48.4(290)
  - multinomial generalizations 17.2(108)
  - multiplicative 49.1(10)
  - natural number sequence 49.1(57)
  - probability 52.2(139)
  - products of
    - reciprocals PXII(57)
    - recurrence sequences PXIII(321)
  - Professor Moriarty 10.4(381) 11.3(225) 12.3(300)
  - q- 12.4(369)
  - Ramus identity 46/47.1(48)
  - sums (and, of)
    - cube tiling code 52.4(325)
    - general 44.2(145)
    - products and squares PXIII(109)
  - 3rd and 4th binomial coefficient 49.2(99)
  - Vosmansky identity 48.1(56)
- Brahmagupta polynomial 34.1(30) 36.1(34)
- Bruckman 10.6(613) 13.2(121) 46/47.3(245)
- Cassini 53.3(218)
- Catalan PXIII(187) 51.4(330)
- Chebyshev polynomials 40.5(424) 42.2(149)
- combinatorial (also see under combinatorics)
  - Bernstein's identity 23.4(347)
  - invariance 16.4(354)
  - Kummer's identity 36.4(339)
  - multiple summations identities 4.4(323)
  - polynomials 44.2(145)
  - sorting problem identity 23.4(366)
  - sum product identities 18.3(214)
  - Wilf-Zeilberger method of proof PXI(123)
- convolution 28.3(215) PXIII(109)
- cyclic compositions 48.3(249)
- d'Ocagne's 50.4(346) 51.4(330) 53.3(241)
- De Polignac 50.3(239)
- Desnanot-Jacobi 54.4(340)
- determinantal 48.1(68)

SUBJECT INDEX
I

identities (and)
- Dickson polynomials 32.5(455) 35.1(11)
- Dixon 48.1(56)
- d'Ocagne 50.3(239)
- Euler 36.4(329) 42.4(295) 45.3(205) 46/47.3((225)
- $\mathscr{F}$- 51.4(330)
- Gauss-Jacobi triple-product 41.3(224)
- Gelin-Cesáro 51.4(330)
- Genocchi 36.4(329)
- Golden gate PXV(255)
- golden number 50.4(352) 52.3(218)
- Hagen-Rothe 13.4(357)
- Hermite PIX(213)
- hockey stick 34.3(280) 44.1(13)
- hypergeometric 43.3(213) 53.3(253)
- Jacobi PIV(33)
- Jacobi's triangular-number 41.3(224)
- Jacobi triple product PXI(109) PXII(285)
- Krattenhaler 34.5(386)
- Kummer 36.4(339)
- Larcombe-Fennessey 53.3(218)
- Lerch's summation PXI(91)
- line sequence PIX(145)
- Melham 51.4(330)
- miscellaneous
  - linear recurrence sequences PXI(243)
  - multivariate symmetric identities 34.5(386)
  - natural number sequence 49.1(57)
  - partition
    - involutions 16.3(198)
    - functions 19.4(361)
- Monzingo 29.3(256)
- Morgado 34.2(164)
- Morgan-Voyce 38.1(61) PI(141) PVII(161) PVIII(179)
- order of apparition 50.1(36) 50.2(132)
- Pell (See under Pell)
- Pfaff-Saalschütz 54.3(259)
- π PXII(17)
- Poisson-Jacobi theta function 41.3(279)
- poly-Bernoulli PXV(99)
- poly-Cauchy PXV(99)
- polylogrithmic 52.4(357)
- polynomial PIX(69)
- product 20.3(256) PXII(285)
- Ramanujan 48.1(34) 50.3(227) 51.2(123) PXIII(89) PXV(41)
- Rogers-Ramanujan 13.4(337) 41.3(263) 42.1(3) 45.3(221)

SUBJECT INDEX
I

identities (and)
- Rokarch 34.5(436)
- star of david 49.1(10)
- Stern polynomial 49.3(220)
- Stirling numbers
  - 1st kind 44.2(131) 48.1(4)
  - 2nd kind 44.2(131) 52.3(226)
  - generalized 1st kind 44.2(154)
  - generalized 2nd kind 42.3(194) 44.2(154) 46/47.4(326)
  - weighted of the 1st kind PXVI/52.5(205)
- summation 14.1(35)
- t-core partitions PIX(201)
- tetranacci numbers 37.4(305) 52.1(50)
- triangular numbers 37.3(194)
- trigonometric 43.3(208) 46/47.1(56) PXII(285)
- Vieta numbers 53.4(340)
- Vosmansky 48.1(56)
- Wang-Carlitz 17.4(299)
- Watson quintuple product PXI(109) PXII(285)
- Zeckendorf family 46/47.3(249)

inequalities
- alpha 1.3(15) 2.1(45) 29.1(30)
- beta 1.3(15)
- equation with 3 variables 13.1(42)
- Euler's constant 49.3(243)
- miscellaneous sequences 19.3(208)
- number theoretic functions 28.3(255)
- numbers
  - integers and eigenvalues of a matrix 28.1(72)
  - irrational 34.1(18)
  - real and rational 27.4(369)
- order of subgraphs of a hypercube 28.2(121)
- parachute 30.1(54)
- polynomial with sequential coefficients 16.2(128)
- prime numbers 12.4(391)

integer representations of *N* (Also see under Fibonacci, Lucas and Zeckendorf)
- basics 10.6(635)
- binomial coefficients as a sum of squares 25.1(29) 25.3(240)
- by (an, the)
  - arbitrary interval of integers 5.4(329)
  - binomial coefficients PXII(57)
  - bracket function of golden number powers (the golden sequence) 17.4(306)
  - consecutive even or consecutive odd integers 20.1(36)
  - differences of squares 40.3(243)
  - incomplete sequences 10.1(81)
  - linear recurrence sequences 50.2(99)

SUBJECT INDEX

I

integer representations of *N* (Also see under Fibonacci, Lucas and Zeckendorf)
- by (an, the)
  - products 11.3(295)
  - sums of powers of 3 8.5(509)
  - sum of three triangular numbers 26.4(332)
  - sum of squares 4.1(88) 45.3(230)
  - sum of two triangular numbers 30.2(175)
- compositions 5.3(223)
- enumerating polynomials 11.3(317)
- general theorems 33.3(208)
- integers
  - as a sum of linear recurrence sequences 50.2(99)
  - from trees PIII(335)
  - hyperbinary representation PXII(35)
  - p-adic 52.3(226)
  - representations of golden numbers 39.2(123)
  - representation far-difference 52.3(247)
- negative digits 40.1(66)
- numbers omitted representations by incomplete sequences 10.1(81) 11.4(443) 13.4(299)
- uniqueness 10.6(569)
- zero-one 11.2(189)

integer sets
- miscellaneous
  - alternating sets 13.4(325)
  - element sizes in a submonoid of integers PIV(139)
  - n-tuples and their members 8.4(365)
  - non-Fibonacci numbers and Diophantine equations PV(387)
  - number of sets with summation properties PVI(271)
  - products of 2 integers which are one less than a square 17.3(269) 38.5(464) 39.2(98)
  - sets (of)
    - not containing a pair of consecutive integers 29.2(141)
    - pairs of an integer and a member of a sequence 27.5(465)
    - primes 7.3(230)
    - solutions of integer equations and computer experiments PVII(93)
    - three and perfect squares 27.3(287)
- Monica 34.2(102)
- Suzanne 34.2(102)

integrals 43.1(31) 45.4(291) PXIII(109)

Iterations 51.3(218)

interspersions in arrays PXI(153) 48.1(13) PXIV(79)

inversion problems 49.2(158)

SUBJECT INDEX
J

Jacobi algorithm 50.3(252)
Jacobi symbol 43.4(351) PXIII(289)
Jacobsthal
    convolution with Lucas numbers 53.2(147)
    curves 26.1(77)
    differential equations
        Jacobsthal polynomials 35.2(137)
        Jacobsthal-type polynomials 35.4(361)
    identities 35.2(137) 48.3(197) PVIII(307)
        integration sequences PVIII(129)
        modified 37.4(350)
        Morgan-Voyce polynomials 37.2(141) 37.4(350)
        negative subscripts 34.1(68)
        Q-like matrices 23.3(240)
        sums 35.2(137)
        Vieta polynomials 40.3(223) 41.3(240)
    numbers (and)
        as a sum of squares 18.1(82)
        Binet formula 10.5(499) PXIV(69)
        binomials sums 54.3(204)
        complete residue system 53.2(147)
        Diophantine equations 54.3(235)
        exponential generating functions XV(27)
        from arrays PIX(187)
        generating functions XV(27) PXV(27)
        Generating function for the *n*th Jacobsthal 41.3(229)
        higher dimension PXIV(69) XV(27)
        identities 10.5(499) 34.1(40) 52.1(20) XV(27)
        representations of *n* by Jacobsthal numbers 10.5(499) 34.1(40)
        sums 34.1(40) XV(27) 35.4(352)
    polynomials (and)
        Bell polynomials PXVI/52.5(54)
        convolutions 16.5(385) 40.3(212) 41.3(240)
        derivative sequences 35.4(352) 38.4(334)
        diagonal functions 35.2(137)
        differential equations 35.4(361)
        factorial PIII(139)
        functional equations PVI(431)
        generalized 35.4(361) 37.2(141) 38.3(239) 43.4(359) 48.3(197)
        generating functions 10.6(599) 16.5(385)
        line sequences 39.3(194)
        Vieta polynomials 54.(141)

SUBJECT INDEX

J

Jacobsthal-Lucas
- numbers
  - Binet formulas 10.5(499) PXIV(69)
  - exponential generating functions XV(27)
  - generalized 38.3(23)
  - generating functions XV(27)
  - higher dinension XV(27)
  - identities 34.1(40) 52.1(20) PVIII(307) XV(27)
  - representing
    - Fibonacci numbers by Jacobsthal numbers 48.1(68)
    - *n* by Jacobsthal-Lucas numbers 34.1(40)
  - sums 34.1(40) XV(27)
- polynomials (and)
  - convolutions 40.3(212)
  - diagonal functions 35.2(137)
  - derivative sequences 35.4(352) 38.4(334)
  - generalized 43.4(359)
  - identities 35.2(137)
  - integration sequences PVIII(129)
  - matrices 23.3(140)
  - negative subscripts 34.1(68)
  - sums 35.2(137)
  - Vieta array PVIII(307)
  - Vieta polynomials 40.3(223) 54.(141)

Jordan generalized Euler totient 40.4(339) 46/47.4(341)

K

Kaprekar's routine 5.5(474) 9.2(189) 19.1(45) 31.2(138) MRFS(90)
Kentucky decomposition of integers PXVI/52.5(68)
Kepler’s tree of fractions PXVI/52.5(136)
knots 24.1(61) 28.3(240)
Korselt criterion PXVI/52.5(164)

L

Lagrange interpolation 34.5(386)
lattice topics
- cardinal of distributive latices 23.3(232)
- degenercy
  - λ-Bell particles 21.3(196)
  - neighbor for particles 14.4(353)
- feudominoes 26.3(205)
- function
  - compostions 22.1(42)
  - cyclotomic numbers 22.1(42)
  - paetitions 22.1(42)
  - polygonal numbers 22.4(318)

SUBJECT INDEX
L

lattice topics
- paths (and, in, on) (Note that some paths not related to lattices)
  - around a circle PI(293)
  - binomial digraphs 45.1(39)
  - Catalan triangle array 27.1(33) 44.2(166)
  - crossing the busy street problem 2.4(310)
  - distance in 3-dimensions PVII(265)
  - in a bi-dimensional lattice 44.2(166)
  - knight's tour 16.3(276)
  - Motzin sequence 40.1(3)
  - multilayer media 28.4(334)
  - number of in a lattice 38.5(395)
  - polygonal 30.3(263)
  - reflected 25.4(317)
  - rook on a chessboard 8.5(538)
  - self-avoiding walks 44.4(330)
  - sequences of integers 5.1(81)
  - sorting problem 23.4(366)
  - triangular arrays 8.3(235)
- polyominoes 26.3(205)
- ternary cubic forms 24.2(129)
- Terquem problem 5.1(59)

Latin
- cubes 11.2(174) 11.5(485) 12.2(133) 12.3(288) 14.2(167) 18.3(208) 19.1(76) 20.4(360) 23.2(139) P.IV(17)
- P-Matrices 34.4(362)
- rectangles (squares) 11.3(241) 17.1(34) 19.4(289) 23.2(139) 34.4(362)
- squares 50.2(119)

Laurent ring 41.1(41)

law of reciprocity 43.4(351)

least common multiple (lcm) (and)
- binomial coefficients 10.6(579) 24.4(310) 33.5(386) PIII(15)
- configurations in
  - Pascal's triangle
    - hexagons 38.3(194) PII(61) PIV(9)
    - Gould's star of David 30.3(251)
    - star PV(11)
  - Pascal's pyramid 43.1(15) PII(7) PVI(23)
- Euler's totient (phi-function) 23.3(265) 30.4(349) 33.4(332)
- matrix of 29.3(271) 34.4(290)
- pseudoprimes 30.4(339)
- terms of a miscellaneous function 36.5(434)

Lehmer
- pseudoprimes 53.3(206)
- superpseudoprimes 53.3(206)

Lekkerkerker's theorem 49.2(116)

SUBJECT INDEX

L

limits of sequential differences 53.3(213)
limits of differences of nth roots of sequences 53.3(213)
linear algebra & vextor space topics 6.5(35,44) 7.1(104) 34.1(55) 39.3(194) PV(441)
    PVII(337)
linear pixel shuffling PVI(1)
linear transformations on the Cartesian plane 54.3(196-203; listed as 247-252)
links 48.2(137)
logarithmic height of an algebraic number 54.1(11)
Lucas (See Lucas file)

Lucas-A

applications and models
    cryptography PIX(263)
arrays 18.1(51) PIX(267)

Lucas-B

Binet formulas (for)
    numbers 27.5(424) 31.4(307) 35.1(11) 43.2(149) 50.3(246) 52.1(3) PIV(91)
    polynomials PV(317)
binomial
    coefficients (and)
        Gaussian q- (and)
            polynomial coefficients
                Lucas 45.1(26)
        generalized Lucas numbers 12.4(339) 49.4(320)
        identities 48.2(161)
        Lucas numbers 33.3(251) 43.2(142) 44.2(172) 48.2(161) PV(169)
        Lucas polynomials 45.1(26)
        Lucas recursion with complex coefficients 44.2(145)
        Lucas triangle 32.2(111)
        sums 15.4(362) 24.3(263) 29.2(141) 33.3(251) 43.2(142) PV(169)

Lucas-C

coefficients in Lucas triangle 43.2(142)
combinatorics
    numbers
        polynomials 51.1(63)
        squared Lucas 29.3(268)
congruence topics
    numbers (and)
        convergents for reciprocal sums 46/47.3(268)
        divisibility P.I(241)
        generalized 31.2(173) 32.1(11) 40.4(345) 41.1(48) PVI(537)
        higher order 46/47.1(26)
        matrices 41.1(48)
        mod 2^n 18.3(261) 38.1(49)
        mod 5 32.3(245)
        mod 5^n 10.5(519)
        mod F_n 32.3(245)

SUBJECT INDEX
Lucas-C

congruence topics
    numbers (and)
        mod Lucas numbers PIV(231)
        mod L_{2k} 36.1(60)
        mod *p* 7.2(113) 18.2(135) 22.4(290) 31.1(7) PI(241) PIV(277)
        mods 79 & 89 50.3(246)
        periodic mod p 41.1(72)
        various mods 17.1(29) 18.3(261) 33.4(290) 41.5(414)
    polynomials 31.3(194) PVI(105)
continued fractions (and)
    numbers (and)
        converging to α^n 29.1(57)
        Dirichlet series 46/47.3(268) 48.1(47)
        Gaussian numbers 31.1(7)
        generalized 46/47.3(268)
        identities 3.4(304)
        -like ratios 46/47.4(298)
        ratios 2.4(269) 8.2(135) 43.1(3)
        square root of the expansion of L_{2n} 35.4(341)
        zeta function 48.1(47)
    Lucas polynomials 31.3(263)
convolution topics (involving)
    arithmetic functions 28.4(316)
    arrays 18.1(51)
    Lucas number sequences 42.3(231)
    Lucas and Jacobsthal numbers 53.2(147)
    triangles and Lucas sequences 40.2(136)

Lucas-D

determinants 24.3(227)
determinants and
    Lucas polynomials 51.1(63)
    Lucas squares 10.2(147)
differential equations and
    generalized Lucas poly 37.3(213) 38.2(167)
    Lucas poly 31.3(194)
Diophantine equations
    Lucas numbers 54.2(172)
    Pell's equation and Lucas numbers 45.2(98)
    quadratic and Lucas numbers 9.4(437) 10.2(201) 16.5(451) PXI(177)
divisibility topics (and)
    convolution PIX(267)
    numbers (and)
        basic properties 19.1(39) 41.5(414) 50.1(36)
        by subscripts 29.4(364) PV(515)

divisibility topics (and)
numbers (and)
divisors of
large integers 39.3(228)
non-homogeneous Fibonacci recurrence numbers 28.2(107)
other Lucas numbers PIX(267)
square Lucas numbers 15.1(3)
powers that divide Fibonacci or other Lucas numbers 15.1(3) 50.3(239)
p divides L_p 22.4(290)
p-adic order 33.3(234) 41.1(72)
primitive prime divisors 6.6(407)
prime divisors 12.2(189) 40.5(435)
prime divisors of generalized 51.1(3)
primitive divisors of Lucas numbers 39.5(439)
product of Lucas numbers and a Fibonacci binomial sum PIX(267)
properties of generalized Lucas numbers 18.4(316) 40.2(153)
divisibility 53.3(194)
polynomials
irrreducibility of 14.4(369)
relatively prime generalized 14.4(369)
sequence PVI(473)

equations 2.2(109)
generalized Lucas $v_n = v_q x^2$, q even 30.2(133)
higher order 2.1(15)
linear 2.1(15)
$L_n =$
x^2 2.2(109) 28.4(306)
$2x^2$ 2.2(109) 28.4(306)
Cx^2, $C < 1000$ 28.4(306)
px^2 28.4(306)
quadratic 2.1(15)
Euler totient (phi function) and Lucas sequences 52.1(3)
expansion of functions (for, in terms of)
Lucas 3.2(101) 14.1(83)
Lucas reciprocals 15.4(293)

factorization
complex Lucas numbers 41.1(13)
Fibonacci-Lucas topics (See in the Fibonacci File)
functions
arithmetic 37.3(265) 38.1(49)
arithmetic functions for Lucas representations of *n* 11.4(337)
number of seating patterns 33.4(368)
Bessel and Lucas numbers 3.2(101)
Chebyshev polynomials and Lucas numbers 23.1(57)

SUBJECT INDEX

Lucas-F

functions
hyperbolic 3.2(101) 23.1(57) PVII(393)
hypergeometric of Lucas numbers 43.3(213)
Lucas
incomplete number sequence 42.2(106)
multisection 12.2(179)
numbers 5.5(445) 9.2(121) 41.1(72) MRFS(61)
q-analogue of incomplete Lucas polynomials 45.1(26)
ordinary: powers of Lucas numbers 5.5(445) 6.2(176)
zeta 46/47.3(268) 39.5(409) 48.1(47)

Lucas-G

generating functions
exponential 11.3(275) 13.2(111) 16.2(121) 26.2(115) 27.5(424) MRFS(61)
generalized (ordinary) 38.2(145) 42.2(106)
ordinary 10.6(571) 15.2(131) 27.2(169) 28.3(194) 38.2(165) 41.2(144)
graphs (and)
complexity 16.1(1) 18.3(229)
Lucas cubes 39.1(12)
spanning sub graph 23.4(330)
spanning trees 15.1(11) 18.3(229)
greatest common divisor (GCD)
Lucas number sequences 29.1(24)
Lucas numbers 43.1(3)
group topics
cyclic sub and Lucas numbers 40.5(460)
Luc numbers and
circularly generated Abelian 6.1(36)
elliptic curver groups PXIII(301)

Lucas-I

identities (and, involving)
alpha 34.5(423) 35.3(230)
arctangent 1.4(65) 52.2(129)
Aurifeuille 42.2(155)
beta 35.3(230)
Binet formulas 27.5(424)
binomial 44.2(145)
Césaro Fibonacci-Lucas identity 18.3(259)
congruences 2.2(109) 17.1(29) 37.1(39)
continued fractions 19.2(163) 27.5(424)
Chebyshev polynomials 46/47.2(167)
general 1.1(16, 65) 1.4(65) 2.1(11,59) 2.2(109) 3.1(54,63,67) 5.2(171) 6.4(245)
7.5(467) 9.1(1) 10.2(147) 10.5(526) 10.6(571) 12.4(317) 13.4(289,340) 14.4(369)
15.1((25) 17.1(18) 19.4(369) 19.5(385) 21.1(3) 21.2(87) 23.3(221) 24.2(160)
24.3(194) 27.2(169) 27.5(424) 28.3(194) 31.3(194) 32.3(284) 34.5(447) 37.1(39)
38.2(98) 39.2(123) 41.2(122) 41.4(345) 43.1(3) 48.3(197) 50.1(27) 51.4(330) 52.1(20)
52.2(141) MRFS(114,159,202) PII(183) PIII(107) PVI(349) 54.2(172) 54.4(296)

identities (and, involving)
generalizations 7.2(113)
generalized (and)
α sums 36.5(457)
binomial coefficients 40.1(9)
continued fractions 34.3(200)
general 23.3(199) 33.2(174) 38.2(145) 38.5(420)
hyperbolic functions 17.1(18) 21.2(87)
Morgan-Voyce numbers 37.4(320)
generalized (and)
polynomials 9.1(1) 31.3(194) 33.2(174) 35.1(19)
powers 8.1(89) 19.5(385)
products (of)
general 3.1(54) 7.1(1) 11.2(153) 19.5(385)
powers 34.3(271)
quotients 33.1(32)
ratios 34.3(271)
sums 34.3(271)
quaternions 7.2(201)
quotient 6.1(96)
reciprocals PXV(107)
sums
Bernoulli 39.4(324)
Binet 27.5(424)
binomial 39.2(116) PXIII(321)
general 15.3(221) 15.4(289) 20.1(21) 27.2(169) 33.1(12) 35.1(57) 36.2(174) 37.3(240) 38.2(165) 38.5(420) PV(487) PVI(105) PXI(109)
reciprocals 33.3(194)
golden ratio 52.2(129)
hypergeometric functions 43.3(213)
products PXV(255)
products of reciprocals PXV(107)
ratios 33.1(32)
sums (and, of)
alpha 48.2(150)
arctangents 52.2(129)
beta 48.2(150)
binomial 1.2(1) 1.4(23) 2.1(29) 2.4(261) 4.4(355) 5.1(45) 7.3(253) 8.1(61) 9.1(1) 15.1(25) 15.4(362) 16.5(411) 27.5(424) 28.3(194) 28.4(316) 35.3(230) 36.1(63) 43.3(213) 44.2(145) 46/47.2(167) 46/47.3(207) 48.1(62) 48.2(161) 48.4(307) MRFS(61,114) PIII(241) PV(169)
general 5.4(383) 13.2(115) 15.1(73) 16.2(121) 21.1(3) 23.3(221) 24.4(349) 26.2(115) 27.5(424) 29.2(132) 32.3(284) 33.3(211) 34.5(444) 36.1(56,60) 36.2(174) 37.3(248) 44.2(172) 45.1(64) 45.2(164) 49.3(231) MRFS(114,157,192,202) PIII(107) PIV(121) PV(169,257) PVI(389) PVII(115) PIX(87) PXV(19) 54.1(31) 54.2(154) 54.4(327)

identities (and, involving)
ratios 33.1(32)
generalized and Chebyshev polynomials 23.1(57)
hyperbolic functions 27.5(424) 46/47.2(167)
Lucas triangle coefficients 43.2(142)
powers 7.5(467) 16.3(213) 16.5(411) 37.3(248) 45.2(171) 46/47.3(207) 46/47.4(312) 48.2(161) 52.1(20) PXIII(297) PXV(19)
products 8.1(61) 9.1(1) 10.6(571) 11.3(275) 16.5(411) 37.3(248) 40.2(124) 44.2(172) 45.2(164,171) 46.2(136) 48.1(80) MRFS(61) PVI(105) PXI(103) PXV(19)
quotients 42.3(250) 49.1(76) PIII(107)
reciprocal products 7.2(211)
sums (and, of)
reciprocals 9.4(402) 15.4(293.356) 17.2(147) 19.1(14) 22.3(261) 24.4(316) 26.2(98) 28.3(223) 32.1(18) 33.3(194) 39.5(392) 36.1(66) 37.3(208,254) 46/47.3(268) 49.1(76) 54.1(31)
squares PXI(103)
trigonometric 7.2(113)
trigonometric functions 41.1(13)
inequalities 2.1(15,45) 39.2(123)
integer representations
by Lucas numbers 4.4(289) 7.3(243) 10.1(29) 17.3(198) 26.3(256) PII(97)
squares of Lucas numbers 27.3(276)
uniqueness of Lucas sums 7.3(243)
integers
Lucas α-integers PXI(233)
multi sets 29.2(108)

-Jacobsthal number convolution identities 54.4(335)

lattice topics
Lucas numbers 23.3(232)
Lucas paths 12.4(336)
least common multiple 33.3(211)
Lucanomials
sums of products 46/47.1(7)
recurrence relations 46/47.1(7)
Lucas-Lehmer test 46/47.3(194)
Lucasian numbers 35.1(43) PIX(225)
Lucasnomials and divisibility 53.3(194)
Lucas's Theorem 51.2(142)

matrix topics (matrices and, for, from, related to)
Lucas
congruence 41.1(48)
factorization 41.1(13)
generalized numbers 40.5(417)
numbers 18.3(261) 37.2(111) 37.3(269) PV(487)
Lucas 1.4(65)
R 2.1(29)
rowed 18.1(43)
vectors 1.4(65)
modified Lucas functions 3.1(67) 14.5(419)
tridiagonal Lucas 42.3(216)
miscellaneous topics
Lucas triangles and Chebyshev-like polynomials 10.5(555)
polynomials sums with Lucas polynomial coefficients 16.2(113)
multisection for Lucas sequences 41.1(72)

numbers and sequences (and)
Argand plots 12.3(233)
balancing numbers PXVI/52.5(187)
Bernoulli
numbers PXV(255)
polynomials 13.1(59)
Binet formula 9.3(277)
binomial graphs 35.1(48)
bracket functions 10.5(526)
Carmichael-Lucas PVIII(293)
central factorial numbers 32.5(395)
Chebyshev polynomials of the 1st kind 1.4(1) 40.5(424) 41.1(13) 42.2(149)
circular subsets 31.3(275)
complete residue system 51.2(151)
congruences
mod L_n 2.1(11)
mod p^2 15.4(346)
third order analogies mod 3^k 15.2(97)
covering the natural numbers 33.4(363)
cumulative connection constants 38.2(157)
decimal fractions 19.5(414)
Diophantine equations 14.2(134) 45.4(304) 48.1(39) 52.4(296)
divisibility 54.2(160)
dynamical system 39.5(398)
electrical power lines 35.2(149)
F-triangle 38.2(98)
Fibonacci polynomials and binomial sums 6.5(55)
Frankel array 45.4(304)
Gaussian sums and identities 3.4(315)

numbers and sequences (and)
generalized (k^{th} order) sequences 52.4(296)
generalized Bernoulli numbers 53.4(349)
generalization with real number subscripts 31.4(307)
generalized (and)
binomial coefficients 12.4(317)
bracket function identities 32.4(297)
co-related sequences PIV(121)
cryptography PIX(263)
determinants 33.2(135)
difference equations 21.4(260)
Diophantine equations 23.3(199)
Dirichlet density of primes PXI(39)
divisibility PVI(473)
division by subscripts PV(515)
generating functions 15.3(221)
identities 5.4(319)
integral sequences and congruences 22.4(290)
irrational sums of reciprocals 32.4(346)
Newton's identities 15.2(131)
ν-triangles 40.4(290)
Pascal triangles 14.2(117)
primality tests PVII(283)
primitive roots 29.1(66)
properties 23.2(120)
pseudo primes 44.1(7) PXIII(55)
q-analogues 27.2(169)
Q-matrices 30.3(225)
rank of apparition 51.4(291)
recurrence relations 31.2(105)
stability 34.4(298)
sums (and, of)
binomial 1.2(75) 2.1(29) 8.1(61) 9.1(1) 15.1(25) 15.4(362) 35.3(230)
Chebyshev polynomials 1st kind 27.5(424)
powers 7.5(467) 19.5(385)
products 9.1(1) 10.6(571) 24.3(194) 27.5(424) 38.1(3) PIII(299)
quotients 26.2(115)
reciprocal 27.5(424)
squares 37.2(111)
graphs 5.4(371) 50.4(352)
heptagonal numbers 40.4(319)
hexagonal chains 45.1(3)
interchanging the order of consecutive terms in the Lucas sequence 10.3(325)
intertwined 2nd order recurrence relations 43.4(316)
k-combinations of natural numbers 16.2(113)
lacunary formulas and a power series function PIX(121)

numbers and sequences (and)
ladder graphs 42.3(222)
lattice paths 12.4(336)
logarithms of 10.3(377)
logistic difference equation 42.4(300)
Lucas
balancing 51.3(230)
-Bernoulli numbers 44.4(347) 46/47.1(26) PVI(257)
complete sequence 7.5(464)
cubes 19.1(39)
-like numbers PI(9)
primes and Lehmer primes
pseudoprimes PI(131)
Pythagorean triples 17.1(1)
-Stirling 46/47.2(136)
matrix identities PIV(51)
method for generating PXV(255)
modified and Q-matrix identities 3.1(67)
Moessner's process 24.4(349)
möibius function 39.5(398)
Monzingo numbers 29.3(256)
Morgan-Voyce polynomials 35.3(233) 38.3(260) PI(141) PVIII(307)
multiples of squares 40.1(41)
nested radicals 45.3(202) 52.1(27)
one less than a perfect
power 19.4(369)
square 13.4(340)
p-adic valuation of 54.2(118)
pairs of Selmer polynomials 50.4(313)
partitions PVII(319)
Pell's equation 52.3(243)
perfect
powers 7.5(476) 16.5(451)
squares 2.1(11) 53.2(124)
periodic
properties 4.1(37) 53.4(335)
recurrence relations 45.4(357)
Pierce expansions 33.2(153)
polygonal numbers 43.4(302) 46/47.3(235)
polynomials generated from 14.1(83)
powerful numbers 45.4(362)
primality tests PXIII(301)
prime divisors 26.4(296)
primitive prime divisors 6.6(407)
products 9.3(277)
products and rank of apparition 51.1(38)

numbers and sequences (and)
pseudo Lucas numbers identities 6.6(305)
Pythagorean triangles 50.1,68)
quotients PXIII(273)
reciprocal sums 42.1(66) 53.4(323)
related sequences and a matrix continuant 13.1(51)
representing Lucas numbers 10.6(635)
Riesel numbers 49.4(334)
self-inverse sequences 43.1(46)
Sierpiński numbers 49.4(334)
spanning trees 12.3(259)
subtractive Euclidean algorithm 30.1(80)
sums (and)
binomial coefficients 13.1(59) 29.4(362) 34.4(326)
Euler numbers 13.2(111)
falling factorials 35.1(62)
of squares 10.3(303)
trigonometric functions 3.2(101) 14.1(83) 23.1(57)
varieties 42.3(256)
vector sequences PVIII(353)
zeroes 4.1(37)
zeta function 46/47.3(268) 39.5(409) 48.1(47)
Zeckendorf representations 10.1(29)

Lucas-O

order topics and Lucas numbers 33.3(234) 50.3(239)

Lucas-P

partitions (and)
and Lucas numbers 4.4(359) 5.4(319) 18.3(220)
generalized Lucas numbers 12.4(339)
Pascal triangle topics
Lucas nrs in the mod 2 Pascal triangle 42.1(38)
and Lucas triangle 5.5(486)
Lucas nrs 3.4(292)
variations and Lucas nrs 3.4(257)
Pell equations 23.3(199) 23.4(300) 42.4(330) 45.2(98) 51.2(98) 52.3(243) PV(449)
periodic topics (and)
Gaussian Lucas sequences 31.1(7)
Lucas function 4.1(37)
Lucas numbers (and)
mod
2^n 34.4(298)
5^n 10.5(519)
p 49.3(201) 54.3(217)
p^n 14.4(343)
one row or one column matrices 29.4(310)
pseudoprimes 35.1(35)
period 41.1(48)

polynomials (and)
Binet forms 37.3(213)
continued fractions 15.3(225) 31.4(354) PIII(217)
convolutions 33.2(174) PVI(105)
derivatives (and derivative sequences)
ordinary 31.3(194) 32.2(110) 33.2(174) 33.5(453) 34.1(68) 34.5(394) 51.4(351) PIV(99) PVII(115)
partial 33.3(268) 35.1(19) 37.3(213) 38.2(167) 39.2(138) 43.2(149) 43.4(290) PVI(105)
divisibility properties 8.4(407) 12.1(95)
electric networks 37.4(350)
generalized (and)
arithmetic functions 38.2(167)
DFF triangles 43.4(359)
divisibility properties 12.1(95)
elliptic geometry 43.2(149)
generated from identities 52.2(141)
generating functions
ordinary 17.1(58)
Ginsburg identities 52.2(141)
graph theoretic models 53.2(135)
Hessenberg's matrix 51.1(63)
identities 17.1(18) 10.5(555)summation identities 53.2(135)
integrals and integration sequences PV(317)
inverse relations 51.1(55)
Lah numbers 6.5(93)
Lucas numbers 15.2(131) 38.2(145)
of Lucas numbers 9.5(541)
other polynomials
Bernoulli 13.1(59)
Fibopolyomials PXV(77)
Chebyshev of the 1st kind 17.1(18) 18.4(353) 25.4(300) 18.4(353) 22.1(61) 27.5(424) PV(123)
Fermat-Lucas-34.1(68)
Jaco-Lucas 43.4(359)
Jacobsthal-Lucas 34.1(68) 35.2(137) 35.4(352) PVIII(129) 38.4(334) 40.3(212) 43.4(359) 48.3(197)
Morgan-Voyce and Lucas numbers 35.3(233) 38.3(260) PI(141) PVII(161) PVIII(307)
Pell 26.1(20)
Pell-Lucas 34.1(68) 37.4(350) 43.4(359) PXI(109)49.2(139) 52.2(141)
Vieta-Lucas 40.3(223) 41.3(240)
Pascal's triangle 17.1(58) 37.4(361)
quotients 33.2(153)
reciprocal sums 23.3(238) 24.1(17)
recurrence relations 37.3(213)

polynomials (and)
    roots 35.2(160)
    sets of Fibonacci polynomial sequences 6.5(35)
    sums (of)
        general 13.2(161) 17.2(147) 23.3(238) 53.2(135)
        powers PXV(77)
    -type
        generating functions 29.4(290)
        longest success runs 29.4(290)
    types
        bivariate 35.1(19) 50.1(27)
        complex 20.3(219)
        cyclotomic 18.2(108)
        q-polynomial sums 45.1(26)
        2nd kind 48.4(327)
    yielding Fibonacci numbers from Fibonacci numbers 14.3(197)
prime numbers (and)
    conditions that sums or differences of Lucas numbers are never prime 21.2(87)
    divisibility of Lucas numbers 18.4(316) 44.3(249)
    fibonomials 53.3(194)
    greatest prime factor of a Lucas number 48.4(358)
    Lucas numbers 4.4(359) 53.1(2) PXI(137)
    Lucas pseudo primes 46/47.3(198)
    Lucas triangle 23.1(66)
    primality test using Lucas numbers PVII(283)
    rank of apparition and the Lucas sequence 18.1(34)
probability (and)
    Benford's Law and expected value and Lucas nrs 11.5(490)
    initial digits in Lucas numbers 36.4(305)
    Lucas sequences in graphs 23.4(330)
    Lucas numbers and successful runs 29.4(290)
    moments and Lucas sequences 49.1(76)
    number of consecutive successes in an experiment and Lucas numbers 20.1(28)
products PXV(165)

Lucas-Q

quaternions 7.2(201)

Lucas-R

rank of apparition (appearance, entry point, order of appearance) (and, in)
    Lucas sequences
        connection with Fibonacci sequences 15.4(346)
        fixed points 51.4(291)
        generalized
            maximal rank in 44.3(202)
            odd primes in PIX(225)
            one more or less than a number in PXI(137)
            primitive prime divisors in PXI(213)

SUBJECT INDEX

Lucas-R

rank of apparition (appearance, entry point, order of appearance) (and, in)
- Lucas sequences
  - powers of Lucas numbers 50.3(239)
  - products of consecutive Lucas numbers 51.1(38)
  - properties 16.1(7) 32.2(155)
  - upper bounds for 51.4(291)

reciprocal (sums of)
- catalog of Lucas and Fibonacci sums 24.4(316)
- L_{2n-1} 15.4(293)
- $(L_{2n-1})^2$ PVII(197)
- L_{2n} 24.4(316)
- $(L_{2n})^2$ 24.4(316)
- $(L_n)^2$ 15.4(293)
- (L_{4n}) 15.4(293)
- $(L_{4n})^2$ 15.4(293)
- $L_{a\,n\,+\,b} + L_k$ 19.1(56)
- $L_{(2n+1)r+k} + L_r$ 22.3(261)
- $L_{(2n+1)r+2c} + L_r$ 24.1(17)
- $L_{2n} + \sqrt{5}F_k$ 29.3(200)
- L_2^n 29.2(132) PVII(197)
- generalized numbers (products) 28.3(223) 32.4(346)
- prime divisors of Lucas numbers PV(417)
- products 7.2(211) 9.4(402) 28.3(223) 33.3(194)
- various powers with various subscripts 32.1(18)

roots (of, involving)
- $(L_n)^2/d$ 27.3(276)
- Lucas characteristic equation 2.1(67)
- Lucas numbers 2.4(269) 5.1(99) 19.3(271) PVIII(251)
- Lucas and Fibonacci numbers 2.4(269) 5.1(99)
- quadratic Lucas and Fibonacci numbers 9.4(427)
- quadratic Lucas numbers 9.4(427)
- sums of powers of roots of Lucas characteristic equations 2.2(119) 8.4(439)
- trigonometric for Lucas polynomials 20.3(219)

Lucas-S

sequences (and)
- associated 53.3(221)
- Jacobsthal-Lucas 34.1(40)
- Jacobsthal Lucas line 39.3(194)
- Lucas line 39.5(419)
- Lucas: phi ftn 52.1(3)
- Morgan-Voyce Lucas line 39.3(194)

sums
- of generalized Lucas functions 22.1(61)
- polynomials 24.1(17)
- powers of Fibonacci & Lucas numbers 46/47.4(312) PXI(103,277) PXII(215) PXIII(297,321)
- zeta function 46/47.3(268)

tiling (and, for)
bracketed and Lucas identities 48.1(62)
chessboards PXVI/52.5(102)
Lucas triangle PXII(169)
triangles (and)
Fibonacci polynomials 8.4(407)
Lucas
numbers 5.5(486) 8.4(360) 10.5(555) 12.1(47) 21.3(192) 23.1(66) 26.4(354) 32.2(111) PVIII(307) 36.2(98) 40.5(405) 43.2(142) PXII(169) PXII(255)
polynomials 10.5(555)
u-numbers 40.4(290)
V-numbers 40.4(290)
trinomials 12.1(47)

Lucas-V

vectors 1.4(65)
Viète
-Lucas array 40.3(223)
Lucas line sequences 39.3(194)

Lucas-W

Wythoff pairs and Lucas representations 17.4(306) 23.4(308)

M

m-section of a sequence 41.1(72)
MacMahon graph 49.4(348)
magic
anti-MRFS(124)
cards-10.2(197)
cubes-11.2(174) 14.2(167) 19.2(97) PIV(17)
diamond-14.2(173)
squares
antimagic 3rd order 12.4(387)
balanced 13.3(205)
Ben Franklin's 48.4(298) 54.4(304)
complete 54.4(304)
Freitag's 6.1(77) 50.2(119)
order
3rd 2.3(216) 6.4(299) 25.2(118)
4th 25.2(118) 35.3(198) 32.4(290) 48.4(298)
5th - 8th 48.4(298)
11th order MRFS(52)
12th order MRFS(127)
even 11.5(543)
odd 24.4(328)
pandiagonal 54.4(304)
powers of 48.4(298)
primes 8.3(317) 10.6(651)
strong 35.3(198)

SUBJECT INDEX
M

MAGMA calculator 49.2(166)
mandelbrot iteration-31.3(263)
maps
    Baker-34.5(423)
    Möbius-35.3(258)
    QRT 51.3(218)
    triangular-34.5(423)
Markov chains 37.1(34) 38.4(364) 40.5(453) 44.1(46)
matrix topics (matrices and, for, from, related to)
    almost Hilbert-Smith 40.4(339)
    anti-diagonal product invariance 53.2(175)
    arithmetic 16.4(327)
    basic operations 1.2(61)
    Big Schröder numbers 31.2(121)
    binomial
        coefficients 37.2(111) 39.3(268) 40.5(417) 43.1(46)
        diagonalization 34.1(55)
        sums 54.3(204)
    Brahmagupta 34.1(30) 36.1(34) 40.2(161)
    C-nomial PXIV(139)
    Catalan 14.2(135) 36.1(76)
    Cholesky algorithm 29.2(164)
    column 35.4(290)
    complex numbers 34.5(440)
    combinatorial identities 23.4(347)
    conference PXIII(335)
    continuant with 3's on the diagonal 13.1(51)
    continued fractions 15.2(123) 33.3(222)
    convolution
        arithmetic 16.4(327) 40.2(136)
        Catalan 14.2(135) 14.3(224)
        generating function of PIX(289)
        Pell diagonal functions PIII(255)
        sequences from triangles 14.2(135) 42.3(205)
        sequences form Pascal's triangle 14.3(224)
    cycle-number PXV(235)
    decompositions of 48.1(29) PIX(289)
    difference equations 28.1(60)
    differential equations PIII(115)
    Diophantine equation 18.2(170) 32.2(170)
    eigenvalues 41.2(105)
    elements in a modular group 42.1(20)
    equivalence relation 12.4(391)
    Filbert 39.3(268)
    forbidden submatrices PXIV(275)
    Fourier transforms 34.4(323)

SUBJECT INDEX
M

matrix topics (matrices and, for, from, related to)
- games
  - Ducci 43.1(53)
  - Silverman payoff 32.1(22)
- generalized shift 3.2(91)
- golden ratio 27.1(47)
- greatest common divisor (GCD) 29.3(271) 34.4(290)
- Hadamard PXIII(335)
- Hankel 38.5(386) 39.3(268)
- incidence of n-tuples 11.3(267)
- invariance 53.4(360)
- involutary 41.2(105)
- jacket PXIII(335)
- Kirchhoff 23.3(258)
- Laplace transforms PVI(93)
- Latin squares 34.4(362)
- least common multiple (LCM) 29.3(271) 34.4(290)
- Markov chains 5.2(179) 40.5(453)
- matricians of the generalized Euclidean algorithm 21.4(285)
- modular groups PVI(487) PXII(115)
- nullspace 40.4(323)
- Paley conference PXIII(335)
- Pascal-like 3.2(81)
- Pascal's triangle 2.2(93) 15.3(201) 21.3(203) 31.4(290) 40.2(136) 43.1(46)
- paths 30.3(263)
- Pell
  - diagonal functions PIII(255)
  - numbers 24.1(47) PIX(213)
- permanents 40.5(429)
- permutation 40.5(429)
- Perron 7.4(394)
- polynomials
  - Asveld 40.2(106)
  - characteristic 1.3(61)
  - factorial 40.2(106)
  - fission 52.3(195)
  - Legendre 24.4(290)
  - Pell 24.4(290) 25.1(21)
- power 34.4(290) PIII(115)
- powers 39.4 (339) MRFS(217) PXII(115)
- progressions
  - arithmetic 40.2(136)
  - geometric 42.3(205)
- q-Seidel PXVI/52.5(117)

SUBJECT INDEX
M

matrix topics (matrices and, for, from, related to)
- recurrence relations
  - linear 30.1(2) 34.1(55) 39.4(339) 44.2(103) MRFS(217) PVIII(75) PXII(77)
  - non-homogeneous 40.2(106)
  - 2nd order 6.5(86) 11.5(466)
- ring elements PVI(53)
- Riordan 31.2(121) 40.4(299) 43.2(170)
- Schröder 43.2(170)
- sequences
  - arithmetic 19.5(456)
  - binary 17.3(212)
  - integers 7.5(494)
  - Pell 17.1(71)
  - recursive 16.1(27)
  - 3rd order 10.2(135)
  - transforming 11.4(395)
- skew circulant 24.1(47) 26.2(172)
- sparse 36.1(76)
- spectral properties PXIII(223) PXIV(139)
- Stieltjes 31.2(121)
- stochastic 15.4(333)
- sums of powers 28.1(60)
- Sylvester 31.4(325) 50.4(313)
- Toeplitz 35.4(300)
- tree theorem 23.3(258)
- tridiagonal 13.2(150) 16.5(435) 39.1(27) 41.1(13)
- 2x2 with det = ± 1 6.1(3)
- Vandermonde 23.4(347) 48.2(175) PXIV(139)
- vectors 1.3(61) 1.4(65)
- words 41.3(194)
- Wythoff pairs 20.4(289) 27.1(47)
- Zeckendorf 39.1(27) 48.2(168)

max-min problems PXIV(43)

means (Arithmetic, Geometric, harmonic, Tetra)- 36.4(323)

measuring and measure theory topics (and)
- Banach space 49.1(66)
- Ergodic theory 43.3(243)
- Chebyshev polaynomials 18.4(334)
- fractal dimension 44.1(46)
- Hausdorf dimension 44.1(46) PV(229)
- L^p discrepency of a sequence 26.2(157)

SUBJECT INDEX

M

measuring and measure theory topics (and)
- measures
  - Borel 16.3(193)
  - Dirac 42.4(320)
  - Gauss 43.3(243)
  - Lebesgue (and)
    - entropy 44.1(73)
    - uniform distribution of a sequence 29.3(230)
  - probability 49.1(66)
- moment problems
  - Hausdorf 39.1(5)
  - K 42.4(320)

Mersenne primes 40.3(272) 46/47.3(194) PXIII(301)
metric space topics 39.5(398)
Moessner Process-24.4(349)
Mőbius inversion 44.2(109)
moments 38.5(384) 39.1(5) 41.3(194) 42.4(320)
monoids PIV(139)
Monna map 50.3(235)
Mordell Equation-MRFS(186)
motif 46/47.4(350)
multigrades-13.3(211) 14.1(22)
multipliers 45.1(10)
multinomial coefficients (and)
- array 11.2(131)
- blockwalking 34.3(280)
- divisibility 32.5(402) MRFS(98)
- gcd PIV(9)
- generalized Pascal triangles 11.2(131) 14.2(117) 36.1(20) 42.1(70)
- identities 17.2(108)
- lcm PIV(9)
- Pascal's pyramid 9.4(351) 24.2(140) 43.1(15) PIII(7) PV(37)
- polynomial functions 37.1(3)
- probability 20.1(28)
- recurrence relations 16.3(227) 17.4(344)
- sums (summation formulas) 3.2(95) 14.5(427) 14.2(117) 31.4(346) PXI (141)
- triangle PIV(77)

multiplicative order of a field element PXI(219)

N

necklaces 48.3(249)
nested radicals 52.1(27)
Newton polygons PIX(1)
nullspace matrices 40.4(323)
nullspace prime 40.4(323)

SUBJECT INDEX
N

number
- base topics 4.3(193) 5.4(329) 6.6(335) 9.5(477) 10.2(213) 12.2(209) 13.4(331) 16.5(428) 17.2(165) 22.2(101) 22.3(196) 25.3(263) 26.1(58) 28.2(98) 28.4(290) 30.1(48) 30.3(221) 35.2(172) 36.5(407) 40.1(66) PII(207) PV(69,143,221,229) PVII(133,405)
- curiosities 3.2(90) 3.4(279) 5.2(208) 5.5(472,474,477) 6.1(60) 10.4(441) 21.2(107) 23.3(221) MRFS(87,88,89,90,91,93) PIII(191)
- cycles 12.4(323) 22.1(50) 35.3(269) 37.2(145) 38.3(201) PVIII(83)
- digit topics
  - initial 7.5(474) 9.1(87) 11.5(490) 13.4(334) 14.1(13) 16.1(51) 16.2(152) 19.1(74) 19.2(121,175) 24.1(2) 25.4(365) 36.4(305) PII(207) PXIV(25)
  - last 1.2(84) 1.4(21) 2.2(138) 2.3(211) 2.4(260) 4.1(82) 4.2(151) 5.2(183) 6.2(109) 11.5(535) 12.4(347) 13.2(162) 13.3(204) 28.2(98) 33.4(325) PV(421)
  - manipulation 3.2(90) 3.4(279) 6.1(60) 6.2(161) 6.4(299) 6.6(385) 9.2(195) 10.3(324) 11.1(91,97) 11.3(332) 13.4(331) 14.1(17) 24.4(313) 33.1(26) 33.5(432) 36.1(3)
  - miscellaneous 22.2(105) 36.1(3) 41.5(441) MRFS(87,91)
  - of summands in the Kentucky decomposition of integers PXVI/52.5(68)
  - of summands in the Zeckendorf decomposition of integers PXVI/52.5(47)
  - significant 49.2(134)
  - sums 34.2(102) 34.4(349) PVII(405)
  - theoretic functions (See under functions)

numbers (also see under sequences)
- abundant 22.4(349) MRFS(162)
- adic (b-, p-, 2-; etc.) 16.6(497) 34.2(156) 36.4(309) 37.2(117) 41.1(72) 43.1(3,15) 43.3(213) 45.3(194) 50.1(36) 50.2(132) 50.3(239) 50.4(346) PVII(1) PIX(1) PXIII(77)
- algebraic 21.2(143) 38.1(17) 42.4(353) 49.1(34) 50.3(252) PVII(405) 54.1(11)
- almost superperfect 46/47.2(111)
- α -Bernoulli 33.2(98) 38.1(56)
- ambiguous 42.1(20)
- amicable (pairs & variations) 15.4(331) 23.2(158) 24.2(106) 25.2(144) 27.2(144) 31.4(295) 45.4(327) PXII(141,153)
- Apéry 22.2(178) 29.3(205) 50.2(129) 51.3(215)
- arithmetic progression 43.2(98) 53.1(53,68) PXIV(1)
- Armstrong 30.3(221)
- automorphic 2.3(230) 10.4(393) 13.2(162)
- Bailey's generalized Catalan 39.2(142)
- balancing 37.2(98) 42.4(330) 45.3(265) 48.2(121) 53.3(261) PXI(185) PXVI/52.5(187) 54.3(235)
- ballot 27.1(33) 36.1(76)
- Beatty 30.3(199) 50.3(207)
- Bell 7.4(437) 14.1(67) 16.2(166) 18.1(66) 18.4(303) 19.2(137) 22.2(156) 28.2(166) 38.2(157) MRFS(69) PIX(187) PXV(255)

SUBJECT INDEX
N

numbers (also see under sequences)
- Bernoulli (and)
  - absolute value and trigonometric sums 44.3(264)
  - Barruland's conjecture 39.4(358)
  - basics 6.3(71) 14.2(147)
  - binomial coefficients 51.2(163)
  - congruences
    - equations 6.3(71) 24.2(154) 32.4(316) 36.3(276) 38.4(339) 42.2(128) PV(355)
    - Jacobsthal-Kazandzidis PXIV(191)
    - Kummer 6.3(71) 16.6(544) 24.2(154) 52.2(160)
  - convolution 40.3(194)
  - differential manifolds 11.1(1)
  - functions
    - exponential generating and Pascal-de Moivre triangles 36.1(20)
    - generating 15.2(161) 28.2(166) 48.1(4) PVIII(103)
    - Raleigh of Bessel functions 23.3(249)
    - trigonometric 33.1(13)
  - generalized 16.2(103) 44.4(347) 51.2(163) 52.2(160)
  - higher order 13.1(59) 32.4(316) 39.3(279) 39.4(358) 46/47.1(26) 48.1(4) PV(355) PVII(1)
  - identities 11.1(1) 13.1(59) 16.2(103) 30.4(349) 32.4(316) 39.3(279) 43.3(208) 46/47.2(140) PV(355)
  - inequalities 16.2(128)
  - invariant sequences 39.4(324)
  - lacunary recurrence relation 36.5(435)
  - numbers (and)
    - a-Bernoulli: variation on sums of powers of n 33.2(98)
    - Euler 13.2(111) 18.4(347)
    - irregular primes 6.3(71)
    - Lucas-Bernoulli 44.4(347) 46/47.1(26)
    - Newton polygons PVII(1)
    - Nörlund numbers 45.2(133) 48.1(4) PV(355)
    - poly-Bernoulli 40.4(362)
    - prime numbers 28.1(16)
    - prime numbers 28.1(16)
    - Stirling
      - 1st kind 32.4(316)
      - 2nd kind 6.3(71)
  - p-adic sums for 2nd kind PXIII(77)
  - Pascal de - Moivre moments PVIII(103)
  - periodic sequences 16.6(544) 20.2(106)
  - polynomials
    - Bernoulli 14.2(101)
    - Eulerian 40.5(399)
    - Genocchi 36.4(329)
  - reciprocal sums 53.2(98)

SUBJECT INDEX
N

numbers (also see under sequences)
- Bernoulli (and)
  - recurrence relations 19.2(177) 39.3(285) 40.2(106)
  - summation identities 11.1(1) 13.1(59) 30.4(349) 32.4(316) 39.1(50) 39.3(279) 43.3(208) 46/47.1(38) 46/47.2(140) 48.1(4) PV(355) PIX(121)
  - sums of
    - powers of *n* 14.2(147) 32.3(271) 34.3(244) 46/47.2(140) 46/47.4(326)
    - products of 2nd kind 45.2(146)
  - umbral calculus 43.1(46)
  - von Stoudt-Clausen theorem 6.3(71) 24.2(154) 28.1(16) 39.1(50) PIX(1)
- big Schröder 31.2(121)
- binary PXIV(185)
- bipartite 29.3(264) 33.3(283)
- biquadratic PXV(137)
- boards with tiles containing fences and squares 46/47.1(18)
- Brier 40.3(272)
- Brousseau MRFS(1)
- Bruckman 10.2(169) 10.6(613) 11.3(225) 13.2(105,121,129)
- C 22.2(119) 22.4(296) 28.4(321) 35.1(62) 44.2(109,131)
- cake 40.4(328)
- Cantor-Pell P.VI(173)
- Carmichael 28.4(347) 30.4(339) 42.2(141) PV(459) PVII(283) PVIII(259,293) PXVI/52.5(164)
- Carmichael-Lucas PVIII(293)
- Catalan (and)
  - arrays 15.1(30) 27.1(33) 40.4(299)
  - Bailey's generalized 39.2(142)
  - binomial coefficients 50.1(62)
  - congruences PXIV(191)
  - convolution arrays 15.1(30) 16.4(289)
  - ceterminants PXII(27)
  - Fibonacci polynomials 41.1(31)
  - generating functions (for)
    - ordinary 31.2(121) 53.3(253)
    - moment sequences PXIII(187)
    - powers of 38.5(408) 40.4(299)
  - hypergeometric functions 53.3(253) 54.3(259)
  - identity for Fibonacci numbers 33.1(82) 37.2(162)
  - matrices 14.2(135) 14.3(224) 36.1(76)
- Catalan (and)
  - miscellaneous topics 10.4(355) 10.5(531) 10.6(591) 13.4(303,357) 14.3(224) 16.1(41) 16.4(289) 20.1(44) 21.1(65) 28.3(194) 30.2(136) 38.5(395) 40.2(161) 40.5(417) 44.2(109) 44.4(297) 45.4(327) PI(55) PII(207) PXIII(187) PXIV(185) PXV(121,255)
  - paths and Catalan triangle array 27.1(33) 44.2(166)
  - prime numbers PXIV(191)

SUBJECT INDEX
N

numbers (also see under sequences)
- Catalan (and)
  - q-Catalan 41.1(31)
  - sine-Catalan number series 52.3(236)
  - sine functions 53.3(253) 54.3(259)
  - sums 53.3(253)
  - triangles (and or square arrays 14.2(135) 14.5(395) 15.1(30) 38.5(408) 40.2(136) 40.4(299) 44.2(166) 48.1(85)
- Cauchy 10.6(613) 48.1(4) PXIII(77)
- Cayley 20.1(59) PVII(337)
- central factorial 19.5(451) 36.2(154)
- Chebyshev 43.2(108) 54.3(204)
- Chebyshev convolution 43.2(108)
- class 6.3(71) PIX(201)
- Clifford 35.3(258) PVII(337)
- cobalancing 45.3(265) 48.2(121)
- Collatz 49.2(131)
- complex 41.5(397) 42.1(55) 51.4(339)
- complicated 24.1(47)
- composite 23.2(149) 40.3(266) 44.4(358)
- congruent integers 16.5(407) 49.4(330) 50.3(222)
- coprime 35.1(29) 53.3(221)
- counting 44.4(316)
- crossing PXIV(117)
- cross-jump 32.1(17)
- cross polytope 54.3(253)
- cubic happy 41.4(301)
- Cullen PIX(167)
- Cycle PXV(235)
- cyclotomic 24.1(47) 39.5(439)
- D 37.2(154)
- d-composite 52.2(148)
- defective 6.2(139) 16.3(193)
- deficient MRFS(162)
- Delannoy PXI(109) PXII(285)
- derangement 19.2(137)
- Dwyer cumulative 32.1(44)
- elliptical Carmichael PXVI/52.5(164)
- Engle (modified) 31.1(37)
- entegers PV(569) PXV(235)
- eponymous 51.3(215)
- escalator 46/47.2(98) PXII(135)
- Eudoxus 32.5(429)

SUBJECT INDEX
N

numbers (also see under sequences)
Euler (Eulerian) 13.1(71) 13.2(111) 14.2(101) 15.3(254) 16.2(103,138) 16.3(216) 16.6(488) 18.4(347) 19.5(398) 20.4(344) 21.2(132) 21.3(162) 29.3(215) 30.4(349) 32.1(44) 33.1(11) 36.2(154) 36.4(317) 37.2(154) 39.3(279) 40.4(295) 40.5(399) 42.2(128) 43.2(132) 44.2(109) 46/47.2(140) 46/47.3(225) 52.2(160) 53.2(98) PIV(145) PVIII(103) PIX(121,267) PXV(219)
Euler constant 49.3(243)
Euler integers 22.3(218)
exceptional values of the equal-sum-and-equal-product problem 50.1(58)
exponential 23.1(45)
factorials 32.5(395) PXI(77)
Fermat 15.2(183) 20.1(12) 26.1(20) 26.4(296) 32.1(15) 40.3(272) 42.1(38) 44.2(121) PIII(139) PXI(137,173,207)
Fermat (non-classical) numbers and binomials sums 54.3(204)
fibbinary: golden ratio 52.1(61)
figurate 3.2(147) 3.3(234) 16.6(561)
figurative 16.4(296)
floret phyllotaxy PXIII(257)
fractional domination of a graph 32.1(69)
G 16.2(166)
Galois 38.2(157)
gap-balancing 51.3(239)
gauntlets 3.4(279)
Gaussian integers 31.1(7) 32.3(266)
generalized integers 16.4(370)
Genocchi 23.3(249) 34.3(244) 36.5(435) 40.2(106,175) 44.1(39) 46/47.2(140) PIV(145) PVI(257) PIX(121,267)
g-gonal 46/47.3(235)
gibonomial 53.4(340)
(g,k)-reverse 52.2(99)
golden 43.1(3)
golden (of order s) 31.3(268)
Gould 30.1(35) 32.2(145)
Gould-Hopper 32.1(44)
Graver 10.6(613)
H 3.2(101)
happy 39.5(462) 41.4(301)
harmonic 31.3(256) 36.5(386) 39.1(4)
Harshad (see Niven numbers)
heptagonal 18.3(258) 41.5(414) 43.3(194) 43.4(302) 52.4(336)
hexagonal 17.1(77) 40.4(319) 52.4(336)
hook 38.1(39) PIX(201)
Howard PIX(121)
hyperperfect 42.4(292)
impure 44.3(194)
integers 38.5(420) 41.5(405)

SUBJECT INDEX
N

numbers (also see under sequences)
irrational 33.3(208) 37.4(299) 38.1(25) 38.2(136)39.1(66) 39.2(149) 39.4(365) 41.2(98) 43.1(3,31) 45.1(35,76) PVIII(95,155)
isodecimal 44.4(341)
K 11.2(179)
K number of a chain 30.4(315)
k-generated 34.2(144)
Kronecker 30.2(161)
k-self 34.2(144)
k-Skipponacci: far-difference representations 52.3(243)
k-Smith 34.2(102)
K-transposable 25.3(263) 26.1(58)
Lah 6.2(127) 6.5(93,100) 17.2(158) 25.2(128) 28.4(321) 38.2(157) 44.2(131)
Lambda 10.2(147)
Lazy Zeckendorf-Niven 45.3(272)
Lehmer 29.1(24) 35.3(252) PI(241) 39.5(439) PXIII(289) 51.2(119)
Liouville 2.1(43)
magic (Various) 3.3(208) 10.6(661) 11.1(91) 14.2(167)
Mersenne 4.4(359) 8.1(1,49) 11.1(1) 13.3(204) 20.1(12) 27.4(317) 33.5(441) 37.4(367) 40.3(272) 40.5(435) 42.4(300) 44.2(121) PXI(137,173) PXIII(301) 54.1(59)
minmax 34.1(7)
Monzingo 29.3(256)
Morgan-Voyce 37.4(320) 38.3(201) 38.5(451)
mosaic PIII(133)
Motzkin 40.1(3) PXIII(187) PXV(121)
n-Niven 34.2(118) 35.2(122)
n-periadic 20.3(227)
n-Riven 39.3(253)
n^{th} primordial 51.3(233)
narcissistic 10.3(295)
Niven (Harshad) 26.2(163) 27.2(139) 31.2(146) 32.2(174) 34.2(118) 34.3(240) 39.3(253) 41.5(431) 54.1(59)
non-Fibonacci 3.3(177) PV(387)
non-hypotenuse 13.4(319)
non-k^{th} power 3.3(177)
non-simple 31.4(365)
nonagonal 52.4(336)
Nörlund PV(355) 45.2(133) 48.1(4) PXIII(77)
normal 6.2(162)
NSW 40.3(253)
octagonal 52.4(336)
Oresme 12.3(267) PIX(87)
orthogonal 11.5(485)
Padovan PXIV(69) PXVI/52.5(201) 54.3(204)

SUBJECT INDEX
N

numbers (also see under sequences)
palindromes 5.5(472) 12.2(209) 12.3(221) 13.3(233) 13.4(350) 28.2(113) 31.3(216) 36.2(171) 36.3(259) 37.1(47) 39.1(66) 40.4(369) 41.3(194, 41.3(229) 42.1(76) 45.1(76) 50.4(297,360) PVIII(47) PXII(115) PXIV(185) PXV(235)
Pell (See under Pell)
pentagonal 8.1(83) 22.3(218) 39.4(299 40.3(233) 52.4(336) PVI(349) PVII(319)
perfect (& variations) 4.1(82) 6.4(286) 8.4(337) 12.1(82) 13.1(25) 13.3(199) 15.4(331,336) 16.6(523) 18.2(137) 19.1(6) 20.1(81) 22.1(50) 22.2(140) 23.1(70) 23.3(270) 25.1(6,65) 25.2(144) 25.4(312,333) 26.4(312) 27.4(317) 28.1(11) 29.3(256) 31.4(295) 36.4(361) 39.1(4) 40.5(435) 45.2(122) 45.4(327) 50.3(231) 53.1(78) 53.3(261) MRFS(162,166) PXII(153) PXIV(109) XV(57,271)
perfect balancing 53.3(261)
perfect: odd 52.3(215) 54.4(291)
Perna 10.6(613)
Perrin PXIV(69) 54.3(204)
π 44.2(141) 45.3(202) 46/47.1(32) 52.4(321) PXII(17)
Pisot 8.5(476) 15.1(15) 29.2(150) 33.4(363) 35.4(335)
Pisot-Vijayaraghavan 44.4(335) 49.2(134)
plastic 50.4(313) PXIII(345)
poly-Bernoulli 40.4(362) PXVI/52.5(205)
poly-Cachy PXV(99)
polygonal 11.1(78) 19.2(180) 20.1(24) 20.4(349) 22.4(318) 24.2(99) 22.3(259) 41.4(372) 43.4(302) 52.4(336)
power free 7.2(140) 12.4(363) 14.4(348) 27.4(366) 29.4(347)
powerful 14.2(111) 20.1(85) 24.4(347) 25.1(34) 25.3(225) 43.1(3) 45.4(362)
profile 17.3(259) 21.1(58)
proto MRFS(22)
P sets 17.3(269)
pseudoprimes 2.3(229) 8.1(49) 16.4(310) 17.2(142) 18.3(261) 27.3(232) 28.4(347) 30.4(339) 31.2(173) 32.2(153,155,158) 33.2(123) 34.4(332) 35.1(35) 36.4(361) 40.1(33) 41.4(334) 42.2(141) 44.1(7) 46/47.3(198) PI(131,241) 48.2(98) PIV(277) PV(459) PVI(409) PVII(283,327,369) PVIII(259,293) PXI(191) PXII(239) PXIII(55) PXVI/52.5(164)
pseudorandom 49.4(340)
pure 44.3(194)
pyramidal 10.6(609) PVI(137)
Pythagorean 28.1(31) 31.4(299) 35.2(98) 41.2(98)
q-André coefficients 43.3(234)
q-Catalan 41.1(31)
q-integers PVI(291)
quasi-orthogonal 27.3(194)
Rado PVI(143)
Ramanujan 24.2(168) 27.1(61)
Ramsey 22.3(235) 46/47.1(10)
rational 43.1(31)
real 34.4(356)
rencontres 25.3(250)

SUBJECT INDEX
N

numbers (also see under sequences)
- repdigits PXIV(97)
- reverse multiple 30.2(126,166)
- Riesel 40.3(272) 46/47.3(216) 49.4(334) 52.2(148)
- Roth 2.1(43)
- Rotkiewicz PXI(173)
- R-Q 28.4(321)
- section-invariant PVII(463)
- self 34.2(144)
- semi-simple 31.4(365) 44.2(98)
- Sierpinski 33.3(206) 40.3(266,272) 46/47.3(216) 49.4(298,334) 52.2(148)
- σ-rectangular 33.3(244)
- simple 34.3(194) 44.2(98)
- Smith 25.1(76) 25.3(225) 34.2(102) 40.4(369)
- sociable 15.4(331) 27.2(144)
- Sophie Germain primes 46/47.3(198) 50.1(58) 53.4(290) PXI(207)
- squares 40.5(460) 41.4(307) 43.3(194) 49.2(166) PIX(63)
- Stern 17.2(103) 17.3(246) 17.4(318)
- Stirling
  - 1st kind 6.5(1,100) 11.2(179) 13.2(107) 14.1(1,49) 15.3(231) 16.1(53) 16.2(103) 16.3(243) 16.6(488,555) 18.2(147) 18.3(242) 22.2(119) 24.2(168) 25.3(229) 31.1(73) 34.3(213) 38.2(157) 38.5(395) 44.2(131) 46/47.2(136) 48.1(4,80) MRFS(179) PIII(139)PIX(267)
  - 2nd kind 6.5(1,100) 7.4(437) 8.2(172) 9.1(51) 13.1(11,59) 14.1(1,67) 14.4(327) 15.3(205,276) 16.1(53) 16.2(103) 16.6(488,555) 18.1(66) 18.2(147) 18.3(242) 19.5(398) 21.4(260) 22.2(119) 24.2(168) 27.3(217) 28.4(321) 29.3(215) 31.3(256) 31.4(341) 32.3(194) 33.3(203) 34.3(213) 36.3(204) 37.2(154) 38.2(157) 39.5(444) 40.4(362) 40.5(399) 42.3(194) 42.4(306) 44.2(131) 45.2(133) 52.3(226) MRFS(176,179) PIII(139)
  - associated
    - 1st kind 18.4(303)
    - 2nd kind 18.4(303)
  - degenerate
    - 1st kind 22.4(296) PIII(161)
    - 2nd kind 22.4(296) PIII(161)
  - generalized
    - 1st kind 16.2(103) 25.4(346) 31.1(44) 32.3(218)
    - 2nd kind 5.4(356) 16.2(103) 25.4(346) 28.4(321) 31.1(44) 32.3(218)
  - number(s) 24.1(22) PV(77,355,367)
  - q
    - 1st kind 5.5(401) 44.2(154)
    - 2nd kind 5.5(401) 44.2(154)
  - signless (unsigned)
    - 1st kind 22.4(296) 28.4(355)
    - 2nd kind 22.4(296) 28.4(355) 46/47.4(326)

SUBJECT INDEX

N

numbers (also see under sequences)
- Stirling
  - weighted 36.3(252)
    - 1st kind 18.2(147) 18.3(242) PIII(161) PXVI/52.5(205)
    - 2nd kind 18.2(147) 18.3(242) 28.4(321) 44.2(131 PIII(161) PVIII(103)
  - weighted associated
    - 1st kind 22.2(156) PIII(161)
    - 2nd kind 22.2(156) PIII(161)
  - weighted degenerate
    - 2nd kind 28.4(321) 44.2(131
- subsidiary minmax 34.1(7)
- suitable 43.2(149)
- symbotic 39.4(365)
- tangent 19.2(137) 21.2(132) 30.4(349) 40.5(399)
- tetrahedral 46/47.1(18)
- θ-integers PXI(233)
- transcendental 42.4(353) 43.1(3)
- triangular 9.1(93) 9.2(196) 11.5(480) 12.2(209) 12.3(221) 13.4(295) 15.2(176) 16.5(470) 17.2(168) 18.2(165) 23.1(77) 26.4(332) 27.2(98) 30.2(175) 34.2(105) 34.3(277) 36.4(319) 37.2(98) 37.3(194) 39.1(58) 39.3(256,276) 40.1(56) 40.4(365) 45.3(265) 46/47.1(18) 53.1(78) MRFS(67) PIV(231) PIX(201) PXI(109) PXIII(35)
- 2-generalized Motzkin 54.2(99)
- universal generated 34.2(144)
- unitary harmonic 21.1(18) 22.4(365)
- van der Waerden type 53.1(53)
- Wall PV(49,61) PXI(95)
- weird MRFS(162)
- Wieferich primes 46/47.4(290)
- Woodall PIX(167)
- Wythoff 23.4(308) PIX(29) PXIII(257)
- z-smooth 41.4(334)
- Zeckendorf 39.1(27)
- Zeckendorf integers 41.5(405)
- Zeckendorf-Niven 45.3(272)

numeration systems 35.2(172)

numerical centers 16.5(470)

O

operators
- algebra of 42.1(3)
- binomial PXIII(187)
- cyclic shift 41.3(194)
- invert PXIII(187)
- RADEX PXIII(355)
- shift 1.2(69) 10.2(135) 35.2(169)

order of apparition (see under rank)

O

order topics (and, for, involving)
-adic numbers (and, for)
logarithms 32.5(397)
candidates 13.1(11)
card shuffling 32.2(136)
complex numbers MRFS(20)
diagonals in Pascal's triangle 20.3(193)
digit
base integers 33.5(432)
differences 33.5(432)
Fibonacci trees 53.2(152)
Hesse diagrams 1.3(43)
Hoggatt sequences 25.4(322)
lattices 23.3(232)
lexicographic 20.3(193) 25.4(322) PV(405)
multiplicative of a field element PXI(219)
natural numbers 14.1(15)
of *n* mod *m* 39.3(238)
partially order sets 1.3(43)
sets of numbers PIX(137)
words PIX(137)
Zeckendorf representations 20.3(193)

P

palindromic
compositions 50.4(297) 50.4(360)
words 41.5(421)
partial fractions 46/47.3(245)
partitions (and)
abbreviated names
F- 27.2(125)
λ- 18.2(147)
ϕ 29.4(347) 31.4(365) 34.3(194) 44.2(98)
σ- 16.6(518)
Borel's simply normal numbers 29.1(19)
complete 36.4(354)
counting restricted 11.4(441)
definition 2.4(241) 8.4(421)
Euler's
identity 23.2(113)
recurrence formula 13.4(337)
Ferrar's graph 16.6(548)
4-square 24.1(67)
function (and)
parity 42.4(368) PVII(319)
lattices 22.1(42)
Gaussian polynomials 29.2(137)
generalized Frobenius 27.2(125)

partitions (and)
generating
functions 28.4(298) 43.4(328)
partitions 27.3(257)
identities for partition
functions 13.2(147) 16.1(5) 16.1(23) 19.4(361)
involutions 16.3(198)
integer PXI(59)
n-dimensional cubes 52.4(325)
Nielsen of step words 17.2(178)
number of 1's in partitions of *n* 51.4(326)
numbers
Eulerian numbers 22.3(218)
Gould numbers 22.1(1)
multiplicative of bipartite numbers 29.3(264)
of *n* (and)
as functions of ϕ 3.3(234)o
generating function for partially ordered 10.2(157)
Netto's method 2.2(115)
number of (enumerating) 2.2(115) 2.4(241) 4.3(209) 8.1(4) 8.4(421) 12.4(360) 14.4(327) 18.2(147) 19.1(64) 19.5(447) 21.4(272) 22.3(218) 25.1(38) 29.2(137) 40.1(57) 40.4(365) 45.3(205,230) 46/47.1(53)
partially ordered 9.3(329) 10.3(328)
statistics 52.1(10)
partitioning the positive integers 20.4(299)
powers 16.6(518)
primes 16.6(518)
r-subcomplete 41.5(386)
rank-vector 16.6(548)
rearrangements of series 15.1(67)
recurrence for restricted functions 18.1(1)
recurrence relation 11.3(307) 19.5(447) PXI(59)
reflected lattice paths 25.4(317)
relatively prime numbers 46/47.4(341)
signed *b*-adic 13.2(174)
Stirling numbers 6.5(1) 22.2(156)
t-core 38.1(39) PIX(201)
triangular arrays MRFS(169)
2-square 24.1(67)
using summands of 1 and 2 only 13.3(278)
with copies 28.4(298)
Wythoff
difference arrays PXI(153)
pairs 22.1(1)
Zeckendorf numbers systems 29.2(120)

SUBJECT INDEX
P

Pascal
- decompositions 42.3(205)
- DeMoivre Coefficients PVIII(103)
- matrix 15.3(201) 21.3(203) 24.3(251)
- polytope 42.1(70)
- pyramid 2.3(223) 10.3(271) 15.3(268) 24.2(140) PIII(7) PV(37) PVI(23) 43.1(15)
- rhombus 35.4(318) 54.2(99)
- squares 36.2(98) 46/47.1(38)
- triangle (and)
  - Andrews' identity 44.2(166)
  - arrays
    - color problems PVI(31)
    - convolution 40.2(136)
    - hexagonal 38.4(299)
    - multiplicative identities 49.1(10)
    - star configuration PV(11)
    - triangular patterns 19.3(257) 19.5(458)
    - whose products are squares 11.5(449,525) 12.1(45)
    - with equal products 12.1(71) PIII(15)
    - with perfect powers PIII(15)
  - *b*-adic numbers in mod *b* triangle 16.6(497)
  - convolution and sequences
    - columns and rows 14.2(135) 14.3(224) 15.1(30) 44.1(13)
    - diagonal sums 11.2(131)
  - decomposition of the Pascal rectangle matrix 42.3(205)
  - determinants extracted from square arrays 11.2(131) 11.5(469) 11.5(511) 16.4(296)
  - displaced array and prime numbers 10.4(355)
  - distributions
    - hypergeometric 33.5(415)
    - negative binomial 33.5(415)
  - divisibility properties of
    - rising diagonal sequences 16.6(501)
    - triangular arrrays 19.3(257)
  - dog leg sequences of binomial coefficients 3.4(292)
  - edges, faces and vertices of polyhedrons 9.2(146)
  - extended and a die with *n* faces 33.5(415)
  - Fermat numbers 15.2(183)
  - fibonomial triangle 5.4(383)
  - 45° variation 28.3(230)
  - fractals 31.2(112)
  - generalized (and)
    - arithmetic sequences 14.2(147)
    - Bernoulli numbers 46/47.1(38)
    - by Harris and Styles 4.3(241)
    - cell occupancy 45.4(347)
    - center covering star PVIII(1)
    - diagonal sums 7.4(341) 10.6(599) 31.4(346)

SUBJECT INDEX
P

Pascal
triangle (and)
generalized (and)
order *k* 45.4(347) PI(229) PVIII(27)
partition sets 14.2(117)
r-spheres 13.2(134)
recurrence relations 18.1(36(36.2(98)
variations 36.2(98)
sums of partitions 17.1(58)
generating functions for
central values 17.1(58)
column sequences 7.2(131) 9.1(74) 13.4(357)
Pascal triangles 16.4(289)
Gould's hexagon conjecture 10.6(565) 12.1(45) 38.3(194) PII(61)
greatest common divisor (GCD) 10.6(579) 12.1(45) 19.5(458) 38.3(194)
45.3(194) 48.4(312) PIII(15) PIV(9) PVII(23)
heptanomial 18.1(36)
hexagonal pattern product identity of Hoggatt and Hansell 9.2(120) 9.4(337) PII(61)
hexanomial 7.4(341) 18.1(36)
implicit triangle of numbers 19.3(276)
integral representation of finite sums 50.4(337)
jump sums for rows PXII(255)
Latin squares 34.4(362)
lattice paths 13.3(215)
least common multiple (LCM) PII(61) PIII(15) PIV(9)
mod
2 - 30.1(35) 32.2(111,145) 42.1(38) 42.1(70) PXII(35)
3 - 42.1(70) PVI(521)
4 - 29.1(79)
p - 19.5(458) 34.4(362) 35.4(318) 42.1(70) 44.1(13)
modified 38.3(194) PII(61)
multisection generating function for column sequences 11.1(85)
negative 32.3(269)
parity for internal triangular arrays 14.1(54)
Pascal
-de Moivre triangle 36.1(20)
rhombus 35.4(318)
pentanomial 7.4(341) 18.1(36)
pyramidal numbers 10.6(609)
quadrinomial 7.4(341) 17.3(264)
right justified rectangular Pascal triangle is diagonalizable 41.2(105)
S generated 20.3(193)
self-similarity 42.1(70) 44.1(13)

SUBJECT INDEX
P

Pascal
- triangle (and)
  - sequences
    - central column 16.1(41)
    - diagonal 10.6(599) 15.4(319) 15.4(359) 20.3(193) 44.1(13) 49.1(51)
    - Ducci 33.4(313) 36.5(463)
    - 1st and 2nd kind 5.4(325)
    - from
      - atomic and nuclear physics 6.2(192)
      - inverses of Pascal triangle matrices 14.5(395)
      - mod 2 trlangles 30.1(35)
    - Gould 30.1(35)
    - (H-L)/k 17.1(58) 17.3(264) 18.1(36)
    - of diagonal sums 9.1(74) PIII(191)
    - row and column 15.2(131) 15.4(319) 15.4(359)
    - stair step diagonal 6.4(221)
  - stair-step diagonal sequences 3.4(292)
  - Star of David 10.6(579) 30.3(251) 45.3(194) 48.4(312) PIV(219) PVI(31) PVII(23)
  - T-triangles (and)
    - convolution trees 26.4(354)
    - Mann-Shanks primality criterion 27.3(272)
    - modified *k*-sequences 22.2(146)
    - multinomial coefficients 24.2(140)
    - Pascal pyramids 24.2(140)
    - probability 17.1(23)
  - theorems
    - Christmas stocking 19.3(276)
    - hockey stick and identity 19.3(276) 44.1(13)
    - *p*-adic 38.3(194)
    - Snow in Kyoto PV(11)
  - trinomial 2.3(223) 18.1(36)
  - variations 3.4(257)
  - with
    - arithmetic progressions 40.2(136)
    - double numbers 6.2(192)

paths
- in connected graphs 53.2(135)
- Motzkin PXIII(187) 54.2(99)
- spanning for Fibonacci-sums 52.1(46)

Pell
- difference triangles 33.5(441)
- differential equation
  - generalized Pell numbers PIX(213)
  - generalized Pell polynomials PIX(213)
  - Pell-type polynomials 35.4(361)
- Diophantine triplets 39.3(242) 43.3(194) 43.4(302)

SUBJECT INDEX
P

Pell
- equations (and, concerning)
  - balancing sequences PXVI/52.5(187)
  - basics 7.2(181) 54.2(172)
  - continued fractions 13.4(309) 42.2(170)
  - Diophantine
    - equation families 39.1(58)
    - primitive solutions 45.4(322)
    - triples 39.3(242)
  - generalized 16.2(99) 19.1(4) 52.3(243) PVII(279) 54.2(112)
  - hyperbolas 54.3(196-203; listed as 247-252)
  - integral sequences 49.4(362)
  - numbers (and)
    - balancing 42.4(330)
    - Divisibility 54.2(160)
    - Pell 14.5(456) 25.3(216) 32.3(245) 34.2(164) 39.3(242) 40.3(233)
    - Pell-Lucas 34.2(164)
    - pentagonal 8.5(531) 40.3(233)
    - polygonal 20.1(24)
    - powerful 14.2(111) 20.1(85)
    - square 19.5(450)
    - triangular-rectangular 33.3(244)
  - of Euler and Sadek 54.1(49)
  - polynomials
    - Chebyshev 36.2(125)
    - Pell 36.2(125)
    - Pell-Lucas 36.2(125)
  - Pythagorean (primitive) triples 6.3(94)13.3(263) 50.1(68)
  - recurrence sequences 7.3(231) 16.2(99) 51.2(98)
  - Rédei rational functions 48.4(348)
  - solutions of two specific equations MRFS(71)
  - theorem of D'Ocagne 38.5(446)
  - 3 by 3 matrix 12.2(212)
  - triangular squares 11.1(78)
- identities (and)
  - Binet formulas 9.1(41) 9.3(245) 14.2(117) 17.1(49) 31.2(166) 50.3(246) PXIV(69)
  - binomial coefficients 48.2(161)
  - convolution 38.5(451) 41.4(352) PVIII(179)
  - diagonal sums of the Fibonacci convolution array 10.6(599)
  - difference triangles 33.5(441)
  - fundamental 9.1(51) 9.3(245) 10.4(403) 13.4(345) 15.4(289) 17.1(71) 22.4(340) 31.2(166) 32.5(429) 34.2(105) 43.3(194) 50.1(68) 52.1(20,141) 53.4(340) PVI(231) PIX(87)

SUBJECT INDEX
P

Pell
- identities (NS)
  - generalized
    - fundamental PIX(213)
    - summation PIX(213)
    - 3rd order PXIII(345)
  - greatest common divisor 34.2(105)
  - multiples of squares 22.4(340) 40.1(41)
  - rank of apparition 13.2(159)
  - ratios 17.1(49)
  - reciprocal sums 26.2(98) 28.3(223) 36.1(66)
  - representations of *n* as a sum of distinct Pell numbers 10.5(449) 32.3(240) 32.5(409)
  - squares 22.4(340) 49.2(166)
  - summation 9.1(51) 9.3(245) 12.2(121) 13.1(19) 13.4(345) 32.5(429) 34.4(326) 39.2(165) 42.4(348) 43.3(194) 54.2(166)
- integers represented by Pell numbers 10.5(449) 32.5(409) PV(305)
- -like numbers PI(9)
- line sequences 39.5(419)
- numbers (and)
  - associated Pell 31.2(166) 39.4(299)
  - Binomials sums 54.3(204)
  - Chebyshev numbers 43.2(108)
  - congruences 22.4(340) 40.3(233) 43.3(194) 50.3(246) PIX(167)
  - curves 26.1(77)
  - exponential generating function for generalized PIX(213)
  - Euclidean algorithm PVII(271)
  - generalized 40.3(233) 43.4(328)
  - generating function 9.3(245) 10.3(271) 13.4(345) 15.4(289)
  - generating function for generalized PIX(213)
  - heptagonal numbers 43.3(194) 43.4(302)
  - higher dimension Binet formulas PXIV(69)
  - magic squares 48.4(298)
  - min-max sequences for PVI(231)
  - partitions 43.4(328) 42.4(348)
  - pentagonal 39.4(299) 40.3(233)
  - periodicity 53.4(335)
  - polygonal (g-gonal) numbers 46/47.3(235)
  - primes 44.3(249) 51.2(98)
  - pseudoprimes PXIII(55)
  - Pythagorean triangles PV(331)
  - quotients PVII(271)
  - random walks walks 43.2(170)
  - sums of powers 48.2(161)
  - 3rd order diagonal functions 28.1(3) PIII(255)
  - vector sequences PVIII(353)

SUBJECT INDEX
P

Pell
- numbers (aand)
  - which are products of Fibonacci numbers 54.1(11)
  - with negative subscripts 32.3(240) 33.5(398)
  - with real subscripts 33.5(398)
  - Wong & Maddocks triangle PXII(255)
  - words 38.5(425)
- polynomials (and)
  - associated 25.1(21)
  - continued fractions PIII(217)
  - convolution 25.4(291) 38.5(451) I(55) PV(367) PVIII(179)
  - derivative sequences 32.2(130) PIX(213)
  - diagonal functions of 28.1(3)
  - differential equations 33.5(453) 41.3(209) PIX(213)
  - exponential generating function 25.3(194)
  - exponential generating function for generalized PIX(213)
  - generalized 22.4(336 23.3(214)) 25.2(106) 43.4(328) PIX(213)
  - generating functions 25.1(45) 25.3(194)
  - generating functions Pell-Lucas convolution 38.5(451)
  - generating function for generalized PIX(213)
  - graph theoretic models 53.2(135)
  - identities
    - fundamental 23.1(7) 24.4(290) 25.1(21) 25.2(106) 52.2(141)
    - summation 16.2(113) 23.1(7) 24.4(290) 25.1(21) 26.4(344) 43.4(359) 49.2(139) PIX(213)
  - integration sequences 32.2(130) 32.3(202) PIX(213)
  - inverse trigonometric functions 23.4(319)
  - ladder networks 37.4(350)
  - matrices of Pell polynomials 26.4(344)
  - Pell-Fibonacci summation identity 26.1(20) 37.4(350)
  - reciprocal sums PI(163)
  - roots of Pell diagonal functions PIII(255)
  - trigonometric functions PIII(171)
  - zig-zag polynomials 23.3(214)
- partitions 42.4(348)
- products 12.2(121)
- staggered Pell sequences 29.1(47)
- triangular numbers 34.2(105)
- walks 43.2(170)
- words 38.5(425)

SUBJECT INDEX
P

Pell-Lucas (and)
- coaxal circles 22.4(324)
- identities
  - Binet 14.2(117) 31.2(166)
  - Cantor-Pell PVI(173)
  - convolution 38.5(451) 41.4(352) 43.2(108)
  - fundamental 13.4(345) 15.4(289) 17.1(71) 23.1(7) 25.2(106) 32.5(429) 50.1(68) 52.1(20) 52.2(141) PVI(231)
  - half companion Pell 50.1(68)
  - reciprocal sums 26.2(98) 28.3(223) 36.1(66)
  - sums 23.1(7) 26.4(344) 32.5(429) 34.4(326) 38.5(451) 49.2(139) PVII(185) 54.2(166)
- numbers (and)
  - Diophantine equations PVII(61)
  - with negative subscripts 32.3(240) 33.5(398)
  - with real subscripts 33.5(398)
- polynomials (and)
  - continued fractions PIII(217)
  - convolutions 25.4(291) 38.5(451)PI(55) PV(367) PVIII(179)
  - derivative sequences 32.2(130)
  - exponential generating functions 25.3(194)
  - generating functions 25.1(45) 25.3(194)
  - graph theoretic models 53.2(135)
  - identities
    - fundamental 25.1(21)
    - summation 25.1(21) 43.4(359)
  - integration sequences 32.2(130) 32.3(202)
  - inverse trigonometric functions 23.4(319)
  - ladder networks 37.4(350)
  - reciprocal sums PI(163)
  - τ-integers PXI(233)
  - trigonometric functions PIII(171)
- problem of Diophantus 34.2(164) PVII(61)

Pellonomials 9.1(51)

periodic topics and periods (and, of, relating to)
- Bernoulli numbers 20.2(106)
- bracelet (for 1967) 5.5(477)
- continued fractions 13.4(309) 29.3(220) 33.3(222) 42.2(170) 45.4(357) 48.1(47) 48.2(129) 50.3(252) PVII(201)
- cubic irrationalities 50.3(252)
- cycles of period *n* 39.1(32)
- difference equations
  - minimum delay PXIV(43)
  - pseudo periodic MRFS(176,179)
- Ducci number game 28.4(302) 43.1(53)
- fractions and a “magic” number 11.1(91)
- Gauss periods mod 13 PV(85)

SUBJECT INDEX
P

periodic topics and periods (and, of, relating to)
- generalized Euclidean algorithm 21.4(285)
- integer with periodic sub sequences 18.3(231)
- natural number appearance as a factor of sequential terms.3.4(279)
- number of orderings function for ranking candidates 13.1(11)
- odd integers mod *n* 13.1(56)
- palindromic difference problem 28.2(113)
- periodic
  - motifs 46/47.4(350)
- periodic
  - n-point
    - in a dynamic system 39.5(398)
    - of a map 36.2(118) 38.3(217)
  - points in a ring 49.4(340)
- permanents with periodic elements 13.2(150)
- prime number appearance as a factor of sequential terms 3.3(187)
- primitive period of general order recurrences 25.3(221)
- pure and non-pure expansion of *n* 34.4(356)
- quasi for Hofstadter Q-function 3 53.2(112)
- reciprocal sums of linear recurrence sequences
- residues of recurrence sequences 28.3(227) 41.2(156)
- sequences (and, of)
  - binomial coefficients mod *m* 27.4(348)
  - combinatorial 26.1(70)
  - Ducci 37.2(145) 45.2(115,155) 49.1(34) 50.4(326)
  - Fibonacci-like 15.1(35) 20.4(311)
  - greatest prime factor 48.4(358)
  - integer mod *p* 35.1(54)
  - *k*th order linear recursive
    - mod *n* PVI(505)
    - period patterns PXI(219)
  - linear recurrences 16.5(435) 30.2(139) 45.1(10) 45.4(357) 48.1(47)
  - loop in a group PV(61)
  - mod *k* in a ring 11.5(466)
  - piecewise linear recurrence PXIV(51)
  - power generator of pseudo random numbers 49.4(340)
  - primes 48.4(358)
  - ratio PXI(85)

SUBJECT INDEX

P

periodic topics (and, periods and, of, relating to)
- 2nd order recurrences
  - mod
    - 10 PVIII(141)
    - *p* 42.2(114) 46/47.1(68) PVI(451) PVII(17)
    - p^n PVIII(325)
  - period
    - identities PXII(95)
    - patterns PIV(37)
  - purely periodic 46/47.2(160) 48.4(335) PIII(287)
  - residue distribution PIII(311)
- 2-term nod an odd prime PVII(49)
- unique integer exponents PIV(109)

solution of logistic difference equations 42.4(300)
Stirling numbers of the 2nd kind 27.3(217)
the periodic point 32.2(167)
tridiagonal matrices 13.2(150)

permanents 7.5(539) 11.3(267) 13.2(150) 45.1(39)

permutations (and)
- alternating sets of integers PXIII(45)
- enumeration by number of
  - maxima 13.1(71)
  - sequences 16.3(259)
- from combinations PV(207)
- number (of)
  - by sequences 19.5(398)
  - regular 18.3(226)
  - relatively prime PIV(1)
  - with a given number of sequences 18.4(347)
- of {1,2,...,n} onto itself 40.5(429)
- one dimensional lattice space 14.4(353)
- problem of Terquem 5.1(59) PXIII(45)
- q-determinants 29.2(160)
- random 23.1(49) PIV(1)
- sequences
  - Ducci sequences 33.4(313)
  - EKG sequence PXV(219)
  - π (*n*) from Wythoff's dual array PXIV(155)
- set partitions 14.4(327)
- symmetric group S_3 31.4(333)
- Terra's function and the 3x + 1 problem 46/47.2(115)
- transformation permutation group PXII(115)
- up-down 46/47.2(126)
- Varol's 34.2(108)
- words 46/47.2(126)

SUBJECT INDEX
P

Peterson graphs 44..4(362)
π
    and the golden number 53.1(42)
    infinite products for 52.4(321)
    infinite products of radicals 45.3(202)
    reciprocal representation
    sums, integrals and the golden number 44.2(141) 46/47.1(32) PXII(17)
poems
    Alfred, Br. U. 2.3(210) 3.1(53)
    Anderson. P.G. 16.2(118)
    Ballot, C. 50.3(194)
    Bruckman, P. 15.3(230,236)
    Carlin, A.V. 36.1(65)
    Ellis, C. 14.4(368)
    Fiefield, D. 8.3(335)
    Greig, W.E. 16.2(166)
    Hoggatt, Jr. V.E. 14.5(455)
    Jones, B. 14.5(452)
    Norden, H. 12.3(240)
    Smith, P.G. 16.2(112)
Polya's index theorem 38.5(395)
polynomial classes 38.5(458)
polynomial curves PI(81)
polynomials
    Al-Salam-Ismail PXVI/52.5(117)
    Alexander 48.2(137) PVI(431)
    André-Jeannin 35.4(329) 38.2(114)
    Appell PIX(213) 51.4(351) PVI(431)
    Array (related) 3.4(257)
    associated with 3rd order Pell numbers PXIII(345)
    Asveld 40.2(106) PII(163) PIII(139)
    Bell 14.1(1) 14.4(327) 40.3(287) PV(61) 32.1(44) PVII(353)
    Bell differential PVII(353)
    Bernoulli (and)
        computer simulation 21.4(272)
        congruences 39.1(50) 42.2(128) 46/47.3(225)
        definition 1.2(1) 13.1(59)
        difference operator MRFS(179)
        Euler numbers 46/47.3(225)
        Eulerian polynomials 40.5(399)
        extended 21.3(162)
        generalized (and)
            identities 13.1(59) 53.4(349)
            Lucas numbers 53.4(349)
            reciprocal sums of Pell numbers PI(163)
            summation identities 9.3(299) 13.1(59) 18.3(242) 33.4(359) 53.4(349)

polynomials
- Bernoulli (and)
  - Genocchi polynomials 30.1(21) 36.4(329) PIV(145)
  - higher order 33.4(359) 39.3(279) PVII(1)
  - hypergeometric 46/47.1(38)
  - identities 6.3(71) 14.2(101) 16.2(103) 30.4(349) 39.3(279) 42.4(295) 44.1(39) 46/47.3(225)
  - inequalities 16.2(128)
  - Kummer's congruence 30.4(349)
  - negative order 30.1(21)
  - Newton polygons PVII(1)
  - Pascal's square 46/47.1(38)
  - period sequence 20.2(106)
  - products 29.2(98)
  - pseudo-periodic difference eequations MRFS(179)
  - reciprocal sums 53.2(98)
  - recurrence relations 9.3(299)
  - summation identities 1.2(1) 9.3(299) 13.1(59) 14.2(101) 33.4(359) 39.1(50) 39.3(279) 42.4(295) 44.1(39) 46/47.3(225) PIV(145)
  - sums of powers of *n* 29.2(98)
  - universal PIX(1)
- Bernstein PIX(9)
- Bhatia-Wolf PXIII(35)
- binomial PVII(133)
- biquadratic 51.3(218)
- Brahmagupta 34.1(30) 36.1(34) 36.2(125) 37.4(320,350) 40.2(161) 46/47.1(56)
- Bring-Jerrad 37.4(290)
- Carlitz 32.1(44) 42.4(306)
- Catalan 52.4(349)
- Catalan family 52.1(75)
- characteristic for recurrence relations 36.5(443)
- Charlier 32.1(79)
- Chebyshev
  - 1st kind (and)
    - binomial coefficients 23.2(166) 44.2(145)
    - compositions 18.4(334)
    - continued fractions PIII(217)
    - Diophantine equation 36.4(335)
    - divisibility of coefficients 39.4(304)
    - 1st order difference equation 42.4(300)
    - 4th order polynomial linear recurrence relation 20.1(44)
    - hyperbolic tangents PIII(171)
    - identities 14.1(83) 14.3(197)
    - modified and odd primes 32.3(277)
    - Pell-Lucas polynomials 23.1(7) 43.2(108)
    - permutations of the first *n* integers 19.5(398)
    - trigonometric roots of characteristic equation 20.3(219)
    - theta functions 50.1(5)

SUBJECT INDEX
P

polynomials
- Chebyshev
  - 1st kind (and)
    - trigonometric relationships 29.1(3) 40.2(128)
  - 1st & 2nd kind (and)
    - Brahmagupta polynomials 40.2(161)
    - Catalan number generating function 38.5(408)
    - compositions 18.4(334) 18.4(353)
    - convolution 43.2(108)
    - derivatives PI(55)
    - factoring 52.4(360)
    - Fermat polynomials and diagonal functions 17.4(328)
    - generalized 34.1(68)
    - generating functions 27.5(424) 40.5(424) 42.2(149) 45.2(164) PXII(285)
    - hyperbolic functions 46/47.2(167)
    - identities 3.4(241) 7.1(14) 22.1(61) 23.1(57) 24.1(70) 25.2(106) 26.1(20) 33.1(11) 42.3(245) 44.2(117) 45.2(164) 48.3(197) PI(55)
    - Morgan-Voyce polynomials 34.4(342) 35.3(233) 36.5(391) PVII(161)
    - Pascal triangles 16.6(501)
    - Pell
      - equation 36.2(125)
      - polynomials 25.2(106)
    - Pell-Lucas polynomials 25.2(106)
    - reciprocal sums 33.3(194)
    - recurrence relations 14.1(83)
    - rising diagonals 13.1(19) 15.3(255)
    - trigonometric relationships 1.4(1) 3.2(101) 37.2(111) 37.3(269) 46/47.2(167)
    - Vieta polynomials 40.3(223)
  - 2nd kind (and)
    - derivatives of Catalan number generating function 40.4(299)
    - identities 12.3(263) 22.4(336)
    - Jaiswal polynomials PVI(355)
    - linear recurrence relations 43.3(256)
    - Morgan-Voyce 32.3(228)
    - Pascal triangles 5.4(383)
    - Pell polynomials 23.1(7) 43.2(108)
    - SL(2,R) transfer matrix PV(429)
    - trigonometric relationships 19.3(240)
  - André-Jeannin generalization 32.5(445) 33.5(453)
  - Chebyshev-like and Gegenbauer polynomials 19.5(393)
  - differential equations 33.5(453) PI(55)
  - non linear 1st order recurrence relation 48.3(209)
  - orthogonality 33.4(341)
  - Rodrigues' formulas 35.4(361)
  - two variable generalization 30.3(199)

SUBJECT INDEX
P

polynomials
- chebytomic 52.4(360)
- convolution 38.5(451) 40.3(212) 41.3(240) 43.2(108)
- Conway 48.2(137)
- correlation 33.2(139)
- cubic 49.4(310)
- cyclotomic 9.1(23) 13.1(25) 16.4(302) 18.2(108) 29.2(150) 36.1(3) 37.3(240) 39.1(32) 41.3(279) 42.4(300) 46/47.1(56) 50.4(326) 52.4(360) PI(81) PXII(239)
- derivative 45.4(291)
- Dickson 32.5(455) 35.1(11) PVI(537) 40.1(33) 40.2(128) 41.1(41) 44.2(145) 48.3(197) 53.3(237) PXIII(179)
- Dumont-Foata 40.2(175)
- Durrmeyer PIX(9)
- Durrmeyer-type PIX(9)
- Euler (and)
  - Bernoulli polynomials 39.1(50)
  - congruences 30.4(349) 39.1(50) 39.3(279) 42.2(128) 46/47.3(225)
  - definition 1.2(1)
  - extended 21.3(162)
  - generalized 16.2(103) 53.4(349) PI(163)
  - generating functions 1.2(1) 21.3(162)
  - identities 1.2(1) 14.2(101) 16.2(103) 21.3(162) 30.4(349) 39.3(279) 44.1(39) 46/47.3(225)
  - inverse operator
  - *n*-dimensional 14.2(101)
  - negative order 30.1(21)
  - recurrence relations 44.1(39)
  - sums 30.4(349) 39.1(50) 39.3(279) 42.4(295) 44.1(39) 46/47.3(225) PI(163)
- Eulerian (and)
  - De Bruyn's summation formula 38.1(56)
  - Euler numbers 40.5(399)
  - generating function 9.1(18) 40.5(399)
  - Genocchi polynomials 34.3(244)
  - fractions 41.1(23)
  - Pell numbers 11.1(62)
  - sums 41.1(23) 40.5(399)
  - tangent numbers 40.5(399)
- exponential 19.2(137)
- factorial-25.4(361) 27.4(303) PIII(139) 40.1(79) 40.2(106
- factoring topics 36.2(158)
- Fermat-17.4(328) 31.2(152) 32.5(445) 33.4(341) 33.5(453) 34.1(68)
- Fermat-Lucas-34.1(68)
- fibotomic 52.4(360)
- fission of two 52.3(195)
- fusion of two 52.3(195)
- Gaussian 38.2(157) 41.3(263) 42.1(3) 43.4(328) PIII(239)

polynomials
Gegenbauer (Ultraspherical) 3.2(101) 19.5(393,422) 22.4(336) 23.1(7) 23.4(294) 24.1(70) 25.4(300) 27.5(424) PI(55) PV(367)
Genocchi 30.1(21) 30.3(239) 36.4(329) 46/47.2(140) PIV(145) PIX(121)
geometric 36.4(295)
Ghandi 40.2(175)
gibonacci 53.3(241) 54.(141)
golden 31.4(354) 32.3(211) 34.3(224)
Grytczuk 41.3(209)
Hermite 1.4(31) 12.2(179) 27.5(424) 28.2(156) 32.1(44,79) 33.2(131) 34.1(2) 38.5(408) PVII(353) PIX(213)
Hörner diagram for 40.5(386)
Howard PIX(121)
Humbert 6.6(318) 23.4(294) 25.4(356) PI(55) PV(367)
hyperbolic 34.1(68)
hypergeometric Bernoulli 46/47.1(38)
Jacobi 13.2(129) 15.2(161) 24.1(70) 27.5(424) 28.3(194) 49.1(66)
Jacobsthal and Jacobsthal-Lucas (See under J)
Jaco-Lucas 43.4(359)
Jaiswal 15.3(255)
Laguerre 14.1(42) 22.2(166) 15.2(161) 16.3(255) 27.5(424) 29.3(205) 32.1(44) 38.5(408) 39.5(403) PIX(101)
lambda 40.5(405)
lambda convolution 40.5(405)
Laurent 51.3(218)
Legendre 3.2(101) 15.2(161) 16.1(41) 27.5(424) 31.2(121) 37.4(320) MRFS(82) PXIII(109)
line sequences 39.3(194) 39.5(419)
Lucas (see under L: polynomials)
minmax 34.1(7)
miscellaneous (and)
A-reciprocal polynomials of the 1st and 2nd kind 18.3(193)
a-simplified polynomials 31.4(315) 33.3(222)
Bernoulli's method and roots of polynomials 42.1(55)
Bernstein and related polynomials 16.1(11)
binomial coefficients in polynomial rings PVI(283)
biquadratic and QRT maps 51.3(218)
Carlitz polynomials 6.3(,249)
collocation 28.2(151)
constructed from sequential members 28.2(151)
coupled sequences and diagonal 16.1(33) 18.1(3)
decimated sequences 33.5(407)
derivative polynomials for trigonometric functions 45.4(291)
DFF triangle 30.1(62)
difference
functionals PVII(449)
triangles and Pell polynomials 33.5(441)

SUBJECT INDEX
P

polynomials
- miscellaneous (and)
  - divisibility 33.5(459)
  - elementary symmetric polynomials 44.2(117)
  - elliptic chord lengths 43.2(149)
  - Eulerian numbers 16.3(216)
  - factorial and
    - 2nd order differential equations 27.4(303)
    - Stirling numbers 16.1(53) 40.1(79)
  - factorial polynomial
  - Gaussian 29.2(137)
  - Gegenbauer polynomials 19.5(393)
  - irreducible polynomial over the rationals MRFS(132)
  - Kimberling's polynomial sequence 53.3(247)
  - Laurent 51.3(218)
  - linear chain of hexagons 29.1(7)
  - modified numerical triangles 34.2(129)
  - multinomial coefficients 14.5(427)
  - multisecting sequences 15.2(131)
  - non-linear 1st order recursive 48.3(209)
  - P-sets and recursive polynomials 16.2(155)
  - Pierce expansions 22.4(332)
  - polynomial method and quadratic fields PVII(405)
  - powers 27.4(303) 34.3(244)
  - quadratic and perfectly cyclic numbers PV(245)
  - quasi-orthogonal 18.2(163)
  - r-q polynomials 28.4(321)
  - rank polynomial from a generalized wheel fan 23.4(330)
  - related to
    - binomial sums PIX(267)
    - multifractals PVII(221)
  - 2nd order
    - André-Jeannin 36.2(110)
    - linear recurrence sequences and secants 21.2(132)
  - σ- functions 32.3(277)
  - solutions to a functional equation PVII(291)
  - square free 26.4(290)
  - Stirling numbers of the 1st and 2nd kind 18.3(242)
  - strong divisibility sequences 17.1(13)
  - sums of
    - *n*th powers of integers 18.1(35)
    - powers of secants and cosecants 44.3(264)
  - Sylvester's simplified residues 31.4(325)
  - ternary cubic 24.2(129)
  - theta functions 50.1(5)
  - 3rd order recurrence relation 17.1(58)

SUBJECT INDEX
P

polynomials
- miscellaneous (and)
  - trinomials 20.4(363) 21.4(259)
  - two parameter recursive 49.1(57)
  - with
    - single roots and satisfying integration inequalities PV(561)
  - values always non-Fibonacci numbers PV(387)
- Morgan-Voyce (and)
  - Binet formulas 38.5(458) PV(199)
  - convolutions 40.2(98)
  - derivatives 38.2(114)
  - derivative sequences 39.2(116)
  - DFF triangles PV(199)
  - differential equations 6.2(167) 38.2(114)
  - differential properties 33.5(453)
  - divisibility properties 16.6(501) 39.2(116)
  - generating functions 12.2(147) 32.5(445) 38.1(61) PVII(161)
  - hyperbolic functions 6.2(167)
  - identities 4.1(73) 12.2(147) 32.5(445) 34.4(342) 35.3(233) 37.1(61) 37.4(320) 38.1(61) 38.5(458) 40.1(59) 48.3(197) PI(141) PVII(161) PVIII(179) PVIII(307)
  - integrals 6.2(167) 38.2(114)
  - ladder networks 3.2(139) 12.2(147) 38.1(8) PI(141)
  - line-sequences 39.3(194)
  - Pascal triangles 16.6(501)
  - Pell convolution 38.5(451)
  - polynomials
    - Brahmagupta 40.2(161)
    - Chebyshev 32.3(228) 34.4(342)
    - companion PVII(161)
    - composite 38.1(8)
    - diagonal 38.1(61)
    - generalized 32.3(228) 34.4(342) 35.3(233) 38.1(8) 38.5(458) 40.1(59)
    - generalized Fibonacci 32.5(445)
    - Jacobsthal PVIII(307)
    - negative subscripts 36.5(391)
    - part of a general class 32.5(445) 33.4(341) 33.5(453)
    - quasi 38.5(451) PVIII(179)
    - related 37.1(61) 37.4(320)
    - Vieta 40.3(223) PVIII(307)
  - Q-type matrices 6.2(167) 12.2(147)
  - trigonometric functions 6.2(167)
  - recurrence relations 4.1(73) 12.2(147) 32.3(228) 38.1(8,61) 38.3(260) 38.5(458) 40.1(59) PV(199)
  - sums 4.1(73) 32.5(445) 35.3(233) 37.1(61) 37.4(320) 38.1(61) PI(141) PVII(161) PVIII(307)
  - triangle of coefficients 32.5(445)

polynomials
- Motzkin family 52.1(75)
- multivariate Pascal PVIII(27)
- Nörlund-Euler 34.4(314)
- orthogonal 4.1(43,49) PIII(217) PV(429)
- P-27.3(194)
- Palindromic 35.1(48)
- Panda's 39.5(403)
- Permutation 18.2(104) 18.3(208) 34.2(139)
- Pincherele P.I(55)
- Pochhammer 37.1(3)
- poly-Bernoulli PXV(99) PXVI/52.5(205)
- poly-Cauchy PXV(99)
- quadratic 41.4(372) 42.2(161)
- quasi Morgan-Voyce 41.4(352)
- R 6.5(100)
- Rayleigh PII(7)
- Reciprocal 18.3(193) 36.4(348)
- Rédei 50.3(252)
- reflection 11.3(285)
- rising
  - diagonal 38.1(61)
  - Factorial 37.1(3)
- rook PIX(101)
- Schur 38.2(167) 42.1(3)
- Schröder family 52.1(75)
- Selmer 50.4(313)
- Stern 49.3(220) 49.3(220)
- Stirling 42.4(306)
- strong divisibility 43.2(166)
- subsidiary MinMax 34.1(7)
- symmetric 35.2(160) 38.2(167) 44.2(117) 46/47.3(262)
- timid 46/47.1(53)
- two variables PVIII(103)
- ultraspherical 27.5(424)
- Vieta (and)
  - Chebyshev bridges 54.(141)
  - convolution 41.3(240)
  - descending diagonal 41.3(240)
  - -Fibonacci polynomials 40.3(223) 41.3(240)
  - Jacobsthal polynomials PVIII(307) 54.(141)
  - Jacobsthal-Lucas 54.(141)
  - line sequences 39.3(194)
  - -Lucas polynomials 40.3(223) 41.3(240) 54.(141)
  - Morgan-Voyce polynomials PVIII(307)
  - Pell polynomials 54.(141)
  - Pell-Lucas polynomials 54.(141)

polynomials
    w 37.2(162)
    with coefficients from two generalized Fibonacci sequences 54.1(3)
    Zernike PXIII(35)
    zigzag 23.3(214) 24.1(8)
polyominoes 3.1(9) 6.2(162) 8.1(90) 11.2(169) 26.3(205) PIII(133)
potency of an integer 4.3(217)
prime numbers (and)
    algorithms for finding prime divisors of an integer 39.3(228)
    Baillie PSW pseudo primes 41.4(334)
    Bernoulli numbers (and)
        congruences 6.3(71) 16.6(544) 28.1(16)
        denominators and numerators as a product of primes 11.1(1)
        reciprocal sums 6.3(71)
    Catalan numbers PXIV(191)
    congruent polynomials mod p 44.4(326)
    consecutive 32.4(352)
    coprime numbers and Diophantine approximation 35.1(29) 38.1(25)
    density topics PXI(39)
    digraphs and powers of primes 34.3(226)
    divisors (of)
        binomial coefficients 4.3(217)
        GCD (3^n - 2, 2^n - 3) 43.2(130)
        hyperperfect numbers 42.4(292)
        minimum number having a product of primes as a divisor 8.4(380)
        Perrin sequences 22.4(366)
        sequences of integers 26.1(31)
        Tribonacci-like non-homogeneous recurrence sequences 17.1(80)
    Euler numbers (and)
        congruences 6.3(71)
    Euler's totient 23.3(265) PXIII(139)
    factorization of an integer PXV(5)
    Fermat numbers 20.1(12)
    functions
        Möibius 24.3(273)
        number or primes 24.3(273) 26.3(271)
        number of powers of primes 24.3(273)
    Gaussian integers 6.5(81) MRFS(19)
    GCD and formulas for 30.3(194)
    greatest prime factor of an integer 48.4(358) PXIII(139)
    growth function 54.1(65)
    large strings 11.4(438)
    Legendre's symbol 18.4(316)
    Lehmer numbers 41.2(122) 44.3(202)
    list of all Pythagorean primes < 2000 24.2(107)
    magic squares 8.3(317)

SUBJECT INDEX
P

prime numbers (and)
- Mersenne 8.1(1) 20.1(12) 37.4(367) PXIII(301)
- 1979 MRFS(91)
- non-Pythagorean triangles 35.2(98)
- null space matrix 40.4(323)
- number maze 40.3(272)
- odd perfect numbers 13.1(25) 16.6(523) 23.1(70) 45.2(122)
- of the form
  - $3n + 1$ 43.1(29)
  - $4n + 1$ 32.1(15) 44.3(249)
  - $8n + 1$ 16.5(407) 24.2(176)
  - $k\,2^n \pm 1$ 44.2(121)
- p-adic integers 12.1(41)
- p-adic valuation 54.2(118)
- partial fraction decomposition 28.1(16)
- partitioning the primes 40.3(272)
- Pell numbers as a product of primes + n^2 22.4(340)
- penultimate digit 13.3(204)
- primality criteria and tests
  - Baillie-Wagstaff PVII(283)
  - Mann-Shanks 10.4(355) 27.3(272) 27.4(362)
  - 1 + powers of various integers 26.4(296)
  - Lenstra's finite fields PXIII(301)
  - Lucas-Lehmer test 8.1(1) PXIII(301)
  - Lucas probable PVII(283) PXIII(301)
  - Piza's 27.4(362)
  - Proth, Pocklington, Brillhart, Lehmer & Selfridge PXIII(301)
  - strong probable PVIII(259)
- primitive Pythagorean triples 13.3(263) 15.3(258) 19.5(449)
- products of primes that differ by a fixed integer 48.2(144)
- pseudo 20.1(12)
- Pythagorean triangles 36.4(319)
- quadratic
  - fields PXI(233)
  - non-residues PXI(207)
- rank of apparition and the Lehmer sequence 44.3(202)
- reciprocal quadratic congruences involving pairs of primes 51.2(98)
- recurrence sequences with almost all of the primes as divisors 17.2(111)
- regular of the 1st and 2nd kind 28.1(16)
- Rotkiewicz numbers PXI(173)
- Sieves
  - Eratosthenes 6.4(261)
  - Tribonacci number 6.4(261)
- σ - partitions 16.6(518)
- simultaneous members in two arithmetic progressions 5.3(286)
- Smith numbers 40.4(369)

SUBJECT INDEX
P

prime numbers (and)
- Sophie-Germain primes 50.1(58) 54.3(217)
- theorems and conjectures
  - Carmichael's 4.3(217) 23.3(265)
  - Fermat's 4.3(217) PXIII(301)
  - Goldbach's 6.5(81) 24.2(107)
  - infinite number of primes 16.4(381)
  - prime number 11.4(438)
  - twin prime 23.3(265)
  - Wilson's 28.1(16) PXIII(301)
- Tribonacci - Wieferich primes 46/47.4(290)
- twin (and)
  - divisibility property 1.3(42)
  - Gaussian integers 6.5(81)
  - powers of 26.3(271)
  - Pythagorean triples 24.2(107)
  - rarity of 26.3(271)

Principle of Permanence for analytic functions 52.4(357)

probability and related topics (and)
- absorption sequences 17.3(275)
- associated Lah numbers 25.2(128)
- Benford's Law (and)
  - asymptotic equiprobability 22.2(105)
  - expected value 11.5(490)
  - formula 14.1(13)
  - monotonicity 19.1(74)
- Bernoulli (successful runs) trials 17.1(23) 23.2(100) 25.2(151) 29.4(290) 42.3(266) PII(89,149) PV(103)
- betting systems 20.3(263)
- binomial identity 52.2(139)
- coin tossing 11.5(517) 16.6(539) 21.4(242) MRFS(130) PV(473)
- consecutive successes PI(43)
- density function 31.2(178)
- die rolling 27.3(283) 33.3(203)
- distributions
  - beta-geometric 25.2(151)
  - beta negative binomial 25.2(151)
  - binomial 28.4(321) 33.2(147) 33.5(415) PI(43)
  - bivariate 41.4(290)
  - Cantor-Fibonacci PVII(311)
  - discrete probability 25.2(128)
  - discrete truncated 28.4(321)
  - Fibonacci 32.5(389)
  - generalized PI(43)
  - geometric 33.2(139) 31.2(178) 32.5(389) PI(203)
  - hypergeometric 33.5(415)

SUBJECT INDEX
P

probability and related topics (and)
- distributions
  - inverse Polya PVII(425)
  - log-normal 23.2(169)
  - logarithmic 22.2(105) 32.1(44)
  - multivariate 25.2(128)
  - negative binomial 27.3(209) 33.5(415) PI(43,203) PIII(273)
  - occupancy Stirling of the 1st and 2nd kind 22.4(296)
  - Poisson 28.4(321) 51.1(44) PI(203) 51.1(44) 52.3(203)
  - polynacci 11.5(517)
- entropy function 26.2(135) 44.1(73)
- gambler's ruin problem 17.3(275)
- generating function for waiting times 21.4(242)
- inclusion-exclusion principle 48.3(236)
- incongruent solutions of a polynomial mod *p* 27.2(176)
- kangaroo recurrences 51.1(13)
- Lebesgue measure 24.1(22)
- lottery tickets 33.5(426)
- Markov chains and
  - combinations 38.2(145)
  - generalized golden section PVII(463)
- moment generating function 31.2(178)
- moments 23.2(169) 36.1(20) 49.1(66)
- Monte Carlo simulation 23.2(169)
- multivariate Pascal polynomial PVIII(27)
- Nash equilibrium 53.2(130)
- non-adjacent ones (NAO) sequences PIII(89)
- number of
  - children produced before producing a girl 29.3(275)
  - prime factors of *n* including multiplicity function 19.3(228)
  - number of consecutive successes in an experiment 20.1(28)
- numbers
  - Bell numbers and moments 14.1(67)
  - Eulerian numbers 32.1(44)
  - Niven numbers 41.5(431)
- Pierce expansions 24.1(22)
- quitting and silver means 53.2(130)
- random
  - permutations and a probability measure 23.1(49)
  - walks 17.3(275)
- relatively prime integers 40.1(13)
- reliability (and)
  - longest successful runs PIII(281)
  - of a system 22.2(146)
  - polydominoes 11.2(169)
- space in the unit cube 20.4(344)

SUBJECT INDEX
P

probability and related topics (and)
    tournaments 30.2(102)
    trees 27.3(201)
    up and down words 46/47.2(126)
    urn models and problems 22.4(296) 34.3(213)
    Zeckendorf decompositions 49.2(116) PVII(105)
products of 2nd order recurrences 52.1(20)
products (not sums of) 28.4(290) 42.4(353)
products 51.2(163) PIII(209) PVI(201)
Prouhet-Tarry-Escott Problem 48.1(34)
Pythagorean (and)
    Candido's identity 4.2(168)
    Fermat's and others non-Pythagorean triangles 35.2(98)
    frequence indicator 20.3(227)
    Levy's theorem 13.2(110)
    n-tuple 34.2(98)
    numbers (and)
        independent 28.1(31) 31.4(299)
        Lucas sequence 28.1(31)
        primitive 28.1(31)
        properties 28.1(31)
    proof of the Pythagorean theorem PIX(247)
    pseudo-Sierpinski triangles 13.2(110)
    quadrilaterals PIX(109)
    quadruple 34.2(98)
    tids
        n- MRFS(67)
        pent- MRFS(67)
    triads MRFS(67)
    triangles (and)
        list of examples 24.2(107)
        primitive
            and the infinitude of primes theorem 19.5(449)
            with one leg and the hypotenuse a prime number 15.3(258)
        properties
            angles 5.2(185) 15.1(8) MRFS(39)
            area 28.1(31) MRFS(43)
            inradius 44.4(368)
            perimeters 20.3(227)
            sides 5.2(185)
        set of integral triangles 27.5(458) 29.1(3)
        sums
            of two sides a square 9.1(83) 10.2(203)
            or difference of legs equal to a prime number 13.3(263)
        three mutually tangent circles with centers at vertices 11.5(541)

SUBJECT INDEX
P

Pythagorean (and)
- numbers (and)
  - with
    - equal perimeters 27.1(2)
    - Fibonacci sides 17.1(1) 17.4(293)
    - legs of the form
      - a, $a + 1$ 6.3(94) 7.2(180) 8.4(402)
      - a, $a + k$ MRFS(160)
      - p, $p + 1$ 36.4(319)
      - ratios of altitude to base an integer PV(137)
- triples (and)
  - algebraic and topological distribution 30.4(335)
  - balancing numbers 37.2(98) 51.3(239)
  - binomial coefficients 40.1(76)
  - congruence 14.2(180)
  - constructions f rom recurrence relations PIII(101)
  - continued fractions 30.2(144) PIV(247) PV(569)
  - Diophantine equations 30.4(305)
  - Fibonacci numbers 20.3(227) 31.1(21) 38.2(98) 40.1(76) 50.1(68)
  - generating identity and other relationships
    - Fermat's for Pythagorean triangles 4.2(168) 5.2(185)
    - Fibonacci numbers 9.3(307) 10.4(441)
    - k-bonacci numbers 9.3(307)
    - Pell numbers 10.4(403)
    - squares in arithmetic progression 53.1(68)
    - triangular numbers 17.2(168)
    - Tribonacci numbers 9.3(307)
  - infinite families 50.1(68)
  - Lucas numbers 50.1(68)
  - n-periodic numbers 20.3(227)
  - obtuse MRFS(34)
  - ordered 46/47.4(331)
  - Pell-type sequences PV(331)
  - properties 46/47.4(331)
  - quadratic reciprocity 14.2(180)
  - review of "A New Chapter on Pythagorean Triples" by Schaake & Turner 28.2(140)
  - trees PIV(247)
  - twin primes 24.2(107)
  - vertex sets of a graph 31.3(276)
  - with a fixed integer 46/47.4(331)

puzzles and games (see under recreations)

SUBJECT INDEX

Q

q-calculus PXVI/52.5(117)
Q Matrix (See under matrix and Fibonacci topics)
quasi-Zeckendorf representations 50.2(106)
quaternions
    basics PVII(337)
    Binet forms 19.5(410)
    generalized 15.4(350) PXIII(179)
    higher order 15.4(343)
    higher order conjugate 19.4(322)
    identities 7.2(201) 7.3(225) 11.5(547) 15.4(343)
    roots of polynomials PXIII(179)
queuing theory 19.1(43)

R

rabbits 1.1(57) 1.4(53) 2.2(108) 5.2(195) 6.3(105) 7.5(482) 11.1(40) 14.3(277) 15.4(311) 16.5(426) 23.2(151) 26.4(306) 31.3(268) 49.2(171)
Ramanujan
    Lost Notebook 51.2(123) PXVI/52.5(91)
    Problem of 53.1(48)
Ramsey theory 46/47.1(10)
random walks 40.2(175) 49.1(51)
rank of a summation formula 40.2(128)
rank of apparition (appearance, entry point, order of appearance) (and, in)
    composite sequences 52.2(148)
    Fibonacci-like sequences and odd primes 20.4(311)
    golden number sequences 22.2(171)
    history of terminology 32.2(155)
    integers one away from a Fibonacci number 50.1(36)
    Lehmer sequences 53.3(206)
    powers of *p* in a splitting field 32.3(260)
    ratios of sequences 38.3(272)
    recursive sequences of integers 13.2(159)
    row sequences in the Fibonacci triangle 36.3(194)
    same for *p* and p^2 14.4(343) 18.1(34)
rank of *k*-regular sequences 53.3(265)
ratios (of, involving)
    Cantor ternary set 28.2(98)
    fractions of the form
        1/d 11.1(91) 12.4(347)
        1/89 model and variations $1/(10^{2n} - 10^n - 1)$ 19.1(53) 19.5(414) 22.3(229) MRFS(78)
    golden number 6.2(156) 6.5(34) 10.2(201) 13.4(322)
    logarithmic limits 24.3(247)
    Noem ratio 20.2(146)
    q-sequence of a given sequence of positive real numbers 27.1(70)
    rational approximation to
        e 6.2(156) 6.5(34)
        ϕ 6.5(34)
        π 6.5(34)

SUBJECT INDEX
R

ratios (of, involving)
- rational numbers and Engle product expansions PV(421)
- real numbers forced between consecutive rational numbers 27.4(369)
- recurrence sequences 15.3(211)
- sequences having consecutive ratios tneding to an irrational number 48.3(265)
- Schröder - Bernstein theorem 29.3(239)
- Sylvester sums and Cantor products 28.4(290)

Rauzy fractals PXI(23)

reciprocal (sums of)
- almost recursive linear recurrent sequences 49.1(40)
- Bessel functions 25.4(304)
- binomial coefficients 35.4(342) PXII(57)
- Chebyshev polynomials of the 1st and 2nd kind 33.3(194)
- Fibonacci-type numbers 15.4(356)
- gcd and lcm matrices 29.3(271)
- Hankel matrices 39.3(268)
- Jacobsthal numbers PXIV(171)
- lcm of products of integers composed from a set of primes 12.4(335)
- Pell number products 28.3(223) PI(163)
- Pell-Lucas number products 28.3(223) PI(163)
- Pell polynomials PI(163)
- prime divisors of linear recurrence sequences PVII(215)
- 2nd order sequences PVI(355)
- $\sinh(_2^n)$15.1(67)
- squares of primes 23.4(364)
- sums of powers of real numbers 39.5(392)

recreations (games, puzzles, etc.)
- Bachet game PXI(167)
- chessboard topics 8.1(90) 10.4(433) 16.3(276) 40.5(429) PVI(155) PIX(101) PXIII(313)
- coins 53.2(130)
- Ducci games 43.1(53) 49.1(34)
- Euclid game 41.4(310) PXI(167)
- Fahr & Ringel 48.4(363)
- n-number game 36.5(463)
- Nim 1.1(63) 1.4(9) 3.1(61) 14.4(380) 15.1(85) 16.2(147) 16.5(459) 17.3(198) 21.2(139) 41.3(253) 41.4(310) PXI(167)
- games (misc) 10.3(301) 20.1(66) 20.3(263) 22.2(152) 23.4(325) 24.3(263) 26.3(262) 29.4(367) 30.2(102) 45.4(319) 45.3(233) PIV(167) PVIII(83) PXI(153)
- puzzles 4.1(59) 4.2(150) 5.4(355) 5.5(444) 6.1(58) 7.3(310) 8.4(406) 9.5(538) 13.2(180) 16.1(67,83) 40.3(272)
- sequential quitting 53.2(130)
- tower of Hanoi PXIII(277)

SUBJECT INDEX
R

recurrence relations (difference equations, recursive sequences)
- adjusted PVIII(121)
- balancing numbers 37.2(98)
- basics-1.2(81) 6.4(279) 6.6(393) 7.1(99) 7.2(194) 7.3(295) 7.5(533) 8.1(96) 8.3(311) 10.3(265) PVI(303)
- Bernoulli lacunary PIX(121)
- convergents of continued fractions 52.3(206)
- coupled 2nd order 44.1(20)
- coupled 3rd order 44.1(26)
- differential-34.1(2)
- finite difference operator (and, relating to)
  - converting difference equations into differential equations 25.4(368) PVI(365)
  - converting differential equations into difference equations 20.4(334)
  - definition 16.1(53)
  - falling factorial functions 16.1(53)
  - pseudo-periodic difference equations MRFS(176,179)
  - Stirling numbers of the 1st and 2nd kind 16.1(53)
  - sums of terms of recurrence sequences 16.1(53)
- generalized golden number 52.3(218)
- Huenbach PXVI/52.5(102)
- kangaroo 51.1(13)
- Konvalina and Liu 46/47.1(48)
- lacunary-18.1(24) 34.3(244) 36.5(435)
- linear
  - 1st order 21.4(272) 41.2(156) MRFS(217) PVIII(75)
  - 2nd order
    - Apery 43.1(31)
    - Asveld polynomials PII(163)
    - binomial sums 54.3(204)
    - Brahmagupta coupled polynomials in 2 variables 34.1(30)
    - Chebyshev polynomial 1.4(1) 13.1(19)
    - continuants 10.6(585)
    - dual definition depending on the sum of all previous terms 46/47.2(146)
    - Fibonacci 31.2(162) 46/47.4(350) 48.3(241) PI(273) PV(123) PVI(143) PVI(431) PVIII(141) PXIV(69)
    - Horadam generalized Fibonacci 1.4(1) 4.3(274) 12.2(175) 17.4(294) 22.3(194) 23.2(126) 29.1(72) 32.3(234,284) 34.1(75) 34.5(409,440) 35.1(24,54,68) 35.3(225) 37.2(162) 37.4(342) 38.3(272) 39.3(214) 40.1(9) 40.2(157) 40.3(269) 40.5(394) 41.2(156) 41.5(397) 42.2(114) 42.3(274) 44.1(46) 44.2(117) 44.4(358) 45.1(56) 45.4(337) 46/47.4(298,316,346) 48.1(68) 48.3(197) 48.4(335) 51.1(49) 51.2(174) MRFS(202) PI(121,273) PII(113) PIII(203,241) PV(123,257,507,527,547) PVI(47) PVII(17,43,49,215,265) PVII(337) PVIII(141) PXII(95,141,187,285) PXIII(139,321) PXIV(51)
    - Horadam generalized polynomial 34.2(129) 43.2(166) 43.3(256) PVII(115)
    - Horadam mod p^n 32.3(260) PIII(311) PVI(451)
    - Jacobsthal PXIV(69)

SUBJECT INDEX

R

recurrence relations (difference equations, recursive sequences)
- linear
  - 2nd order
    - Lucas 48.3(241)
    - mod p 53.4(217,290)
    - Morgan-Voyce polynomial 38.5(451) PVII(161)
    - Motzkin 40.1(3)
    - Nash PVI(431)
    - operator format 27.2(156)
    - *p*-regular 53.4(290)
    - Pell 32.5(429) 38.5(451) 43.2(170) PXIV(69) 54.1(49) 54.2(112)
    - Pell-Lucas 32.5(429)
    - polynomial 31.2(152) 32.2(124)
    - random Fibonacci 43.3(243)
    - sequences of derangement numbers 54.2(166)
    - Sierpinski 40.3(266)
    - (3,F) generalized Fibonacci 33.1(9)
    - trigonometric coefficients PIII(223)
    - two variable 34.4(314) 44.2(166)
  - 3rd order (and)
    - binomial sums 54.3(204)
    - continuants 10.6(585)
    - coupling of fundamental and primordial sequences 33.2(142)
    - general properties 10.2(135)
    - generated from two 2nd order sequences PVI(303)
    - generalized Tribonacci: $T_{n+3} = a\ T_{n+2} + b\ T_{n+1} + c\ T_n$ 10.4(429) 12.2(167) 15.1(41) 22.4(366) 34.2(152) 34.5(447) 35.1(54) 35.2(135) 39.2(107) 43.1(31) 43.4(316) 50.2(99) 51.3(268) PI(185) PVII(83) PXIII(321)
    - generalized Tribonacci polynomials PI(185)
    - Jacobsthal PXIV(69)
    - Perrin/Padovan 45.4(64) PXIV(69)
    - Q-matrix analogues 10.2(135)
    - Pell PXIII(345) PXIV(69)
    - strong divisibility sequences 30.2(98)
    - Tribonacci 20.4(289) 22.3(244) 30.2(98) 34.5(447) 45.4(337) PXIV(69)
    - Tribonacci-Line PIX(145)
    - (2,T) generalized 35.4(358)
  - 4th order
    - coupling of fundamental and primordial sequences 33.2(142)
    - generalized tetranacci: $U_{n+4} = a\ U_{n+3} + b\ U_{n+2} + c\ U_{n+1} + U_n$ 34.2(152) 41.1(41) 43.4(316) 50.2(99) PVII(115)
    - generalized tetranacci polynomial PVII(115)
    - Jacobsthal numbers PXIV(69)
    - Pell numbers PXIV(69)
    - Perrin/Padovan PXIV(69)
    - sequence from a Fibonacci identity 41.3(279)
    - Troué MRFS(18)

SUBJECT INDEX
R

recurrence relations (difference equations, recursive sequences)
- linear
  - 5th order
    - $(F_n)^4$ 42.2(155)
    - Jacobsthal numbers PXIV(69)
    - knapsack-like codes 53.1(24)
    - Perrin/Padovan PXIV(69)
    - sequence from a Fibonacci identity 41.3(279)
  - *n*th (general) order (and, for, involving)
    - asymptotic behavior 28.4(340)
    - basic properties 1.2(69) 12.4(327)
    - Binet formulas 22.4(327) 23.4(290,359) 33.2(142)
    - binomial
      - coefficients 19.1(24) 43.2(124)
      - transformations 39.4(324)
    - bivariate probability distribution 41.4(290)
    - bounds for solutions 41.2(133)
    - canonical representation 10.1(71)
    - combinatorial problem 16.3(227)
    - combinatorics function technique CFT 22.1(29)
    - congruences (and)
      - lacunary sequences 41.1(41)
      - matrices 41.1(48)
      - mod *p* 27.1(25) PII(39)
      - mod p^n 45.1(10)
    - convergence and Ostrowski condition 40.5(386)
    - convergent sequences 42.2(98)
    - coupling of fundamental and primordial sequences 33.2(142)
    - covering of natural numbers 33.4(363) 46/47.1(79) PII(143)
    - created by products of terms of 2 separate n^{th} order sequences 34.1(55)
    - cryptography PIX(263)
    - delay equations 36.3(211)
    - derived sequences PVII(83)
    - difference triangles 33.5(441)
    - Diophantine properties PVII(295)
    - divisibility 35.2(129)
    - dual definition depending on the sum of all previous terms 46/47.2(146)
    - exponential generating functions 1.2(69) 5.3(281)
    - F-L sequences PVIII(369) PIX(297) PXI(265)
    - factorial
      - Binet formula 42.4(320)
      - polynomials 19.1(24)
    - general Fibonacci
      - identities 5.5(461)
      - relation between roots and coefficients of auxiliary equations 8.4(439)
      - sums 22.3(204)

SUBJECT INDEX
R

recurrence relations (difference equations, recursive sequences)
linear
n^{th} (general) order (and, for, involving)
generalized Pythagorean theorem 12.4(327)
generating
functions 19.2(106) 22.1(29) 23.4(290,347) 39.4(324)
higher order from 2nd order 22.2(98)
power sequences from other sequences 42.2(155)
identity construction PXII(225)
integer representation 50.2(99)
invariant sequences 39.4(324)
Jacobsthal PXIV(69)
Kronecker's theorem 14.1(27)
L-sequences 43.1(70)
limits of ratios 15.3(211) 42.1(55) 42.2(98)
matrices
in a finite field 44.2(103)
used to establishing properties PV(601)
Vandermonde 23.4(347)
measure of distribution in a triangular array PVII(415)
over an algebraic number field PXIII(11)
Pell numbers PXIV(69)
periodic sequences
mod p PVII(17)
patterns in a finite field PXI(219)
purely in a ring 46/47.2(160)
Perrin/Padovan PXIV(69)
Pisot numbers 33.4(363)
polynomial recurrence 27.2(153)
powers of recurrent sequences 36.5(443)
prime divisors MRFS(45) PI(257)
reciprocals 49.1(40)
reducing the order 23.1(81)
regular subsequences 43.1(70)
solution methods
Bernoulli-Euler 42.1(55)
differential equations PVI(365)
E-algorithm 42.2(98)
matrices 28.1(60) 30.1(2)
using Taylor functionals PVII(449)
solution represented by double sums 19.1(64)
sums (and, of)
counting sequences PXIII(321)
multinomial coefficients 23.4(290)
square roots of two solutions of separate sequences 33.3(240)
squares 33.2(135)

SUBJECT INDEX
R

recurrence relations (difference equations, recursive sequences)
- linear
  - n^{th} (general) order (and, for, involving)
    - terms common to different sequences PIV(177)
    - terms representate3d by previous terms PXI(159)
    - unit sequences mod *m* 25.3(221)
    - Zeckendorf decomposition 51.1(13)
  - ∞-order 40.5(453)
- logistic 42.4(300)
- matrix P.VII(449) PXIII(223)
- miscellaneous sequences (and)
  - Bessel functions of the 1st kind PII(7)
  - Chebyshev-like polynomials 48.3(209)
  - Fibonacci
    - creating variations 1.1(30)
    - with Fibonacci subscripts 5.2(129)
  - in a finite Abelian group 8.3(255)
  - iterated PV(143)
  - sieve of Eratosthenes 48.3(236)
  - symmetric sequences of order 1-5 13.1(33)
  - using products of lower order sequences to generate higher order ones PVI(303)
  - with a half-way back term 4.2(117)
- non-homogeneous
  - counterexamples for general + *b* mod *m* and mod 2^n 8.3(264)
  - Fibonacci + n^m 8.1(39) 11.2(166) 21.4(260)
  - 1st first order +
    - a control input function 10.6(561)
    - n^k PIX(267)
    - $(n + 1)^k$ 28.1(60)
  - 2nd order +
    - C t^n where t is a real number PXV(205)
    - constant 32.3(253) 35.2(169) 48.3(265)
    - *h n* + *k* 37.4(326)
    - hydrocarbons (i.e. fibonccenes)
    - one 35.2(111) PVIII(75)
    - polygonal numbers 52.4(336)
    - sum of powers of *n* 30.3(256)
  - 3rd order +
    - constant 43.3(202)
  - n^{th} order +
    - terms from a sequence of real or complex numbers 40.1(79) 40.2(106)
- nonlinear (with)
  - powers 28.1(60)
  - product terms 2.3(220) 8.5(470) 20.1(1) 22.1(76) 34.1(30) 16.1(11) 49.4(362) MRFS(46) PVIII(75) 54.3(242)
  - squared terms 4.2(116) 10.6(561) 16.1(11) 48.3(209) 49.4(362) MRFS(46) PVIII(75)
  - transcendental coefficients PIV(189)

SUBJECT INDEX
R

recurrence relations (difference equations, recursive sequences)
- Nörlund numbers 48.1(4)
- 1-bounded difference equations 41.2(133)
- *p*-regular 54.3(217)
- partial (multivariable) 2.3(185,197) 4.3(202) 9.3(313) 33.3(279) 34.1(30) 35.1(32) 38.5(458) 40.5(405,417) 44.2(154) 46/47.3(262) P.VI(105) PVI(271) PXI(251) PXIII(45) 54.3(235)
- Pascal's 13.2(127)
- Pisot 50.4(304)
- polynomial coefficients 52.1(75)
- products of 12.4(365) 14.2(159) 16.1(27)
- Ramus 46/47.1(48)
- reflections 17.2(118)
- systems 14.1(78) 16.5(435) 35.1(3) 35.4(358)
- variable coefficients 1.4(35) 6.5(86) 13.2(107) 17.3(228) 23.3(194) 34.1(30) PVII(449)

regular multiplicative diagrams 49.1(10)
repunits 40.4(369) PXI(177) 54.1(59)
residues (and, for)
- complete system for
  - Fibonacci numbers
    - mod *m* 6.2(139) 10.4(373)
    - mod *p* 8.2(217) 9.5(497)
  - Lucas numbers
    - various moduli 51.2(151)
- cubic (for)
  - mod *p* PVI(423)
  - Tribonacci sequences mod *p* in a Galois field 48.3(228) 48.4(324)
- definitions (for of)
  - Fibonacci numbers 2.1(42)
  - groups 6.4(275)
  - period mod *m* 6.4(275)
- digraphs with residues mod *m* as vertices 34.3(226)
- Fibonacci-like sequences with Fibonacci coefficients, H_m mod H_m 5.3(298)
- fibonomial coefficients mod *p* 32.1(60)
- generalized
  - binomial coefficients mod *p* 38.3(227) 44.1(46)
  - Fibonacci sequences 15.1(1)
- groups of residues 15.2(145)
- least positive for F_n
  - mod F_m 2.3(217)
  - mod *m* 2.4(277)
- n^n mod *p* 19.2(110)
- polynomials with integral coefficients mod p^k 41.2(156)

SUBJECT INDEX
R

residues (and, for)
- quadratic (and, for, of)
  - and non-residues as a normal subgroup PV(245)
  - consecutive triples mod *p* 23.2(133)
  - Fibonacci sequences mod *p* 46/47.1(68)
  - integers mod *p* MRFS(94)
  - non-residues and pentagonal numbers PVI(349)
  - number of cycles in a directed graph 35.4(346)
  - primes 4.2(135) 16.1(47) 4.2(135)
- quartic of
  - 5 4.2(135)
  - *p* 4.2(135)
- ratios involving the least positive index of F_n 4.3(217)
- system for composite moduli 13.4(329)
- x^m mod n 5.4(305)
- 2nd order sequences
  - completeness mod *p* 38.3(272)
  - degenerate sequences 42.2(114)
  - distribution of mod *p* PIII(311)
  - Fibonacci numbers mod
    - mod 3^k 49.3(201)
    - 5^k 21.3(189)
    - *m* 4.3(217)
  - Fibonacci sequence in a finite field 29.4(333)
  - incomplete system mod *p* PII(113)
  - linear recurrences mod *p* PVI(451)
  - Lucas numbers mod 3^k 49.3(201)
  - periodic appearances of residues mod *p* 29.1(72)
  - periodic sequence of residues of a recurrent sequence mod *p* 34.5(440)
  - *p*-regular sequences42.2(114)
  - principle multiplier mod *p* 29.1(72)
  - reduced system mod *p* 38.3(272)
  - related to the 3x + 1 problem 46/47.2(115)
  - uniformly distributed mod *m* 28.3(227)

reviews (books, DVD's)
- Algebra Through Problem Solving by A. P. Hillman 4.3(264)
- Catalan Numbers with Applications 48.1(85)
- Fibonacci and Lucas Numbers by V. E. Hoggatt, Jr. 7.1(105)
- Fibonacci's Liber Abaci by L. E. Sigler 42.1(82)
- 535 Puzzles and Curious Problems by H. E. Dudley 6.1(84)
- General Pascal Triangles and Pyramids ... by B. A. Bondarenko 31.1(52)
- I Ching Games of Duke Tan ... & C. C. T'ung by H. Y. Li & S. S. Morrill 11.3(266)
- Invitation to Number Theory by O. Ore 7.1(105)
- "Julia Robinson and Hilbert's Tenth Problem" on DVD by Zala Films 46/47.2(135)
- Leonard of Pisa by J. & F. Gies 8.3(280)
- Leonardo Pisini; Liber Abachi ... by H. Lüneburg 31.1(72)

SUBJECT INDEX
R

reviews (books, DVD's)
- Leonard Pisano (Fibonacci) The Book of Squares 26.4(382)
- Mathematical Model of Life and Living, A by L. K. Shaw 10.4(444)
- Mathematical Quickies by C. W. Trigg 6.1(88)
- New Chapter for Pythagorean Triples, A by A. G. Shaake & J. C. Turner 28.2(140)
- Proofs That Really Count... by A. T. Benjamin a& J. J. Quinn 43.4 (326)
- Recurring Sums by D. Jarden 4.3(208) 5.4(328)

rings & ideals (and, of)
- division 19.5(440)
- equations in quintic number rings PXI(129)
- Euclidean 19.5(440)
- Fibonacci lattices 41.3(279)
- Fibonacci plane 14.4(289)
- first order language of 41.4(307)
- generalized Stirling pairs 31.1(44)
- iterztion graphs 45.3(239)
- matrices 11.5(466) PVI(53)
- non-Euclidean domain 31.4(325)
- *p*-adic integers 44.4(347)
- polynomials
  - in F-L rings PIX(297)
  - with factorial and binomial coefficients PVI(283)
- residues mod *m* 49.4(340)
- semigroups 13.1(50)
- sequences
  - Fibonacci 8.2(182) 17.4(347) 28.2(172)
  - general order PXIII(11)
  - in rings PVII(133)
- sequences
  - periodic sequences 46/47.2(160) 48.4(335)
  - recurrent 14.3(210)
  - 2nd order PXIII(187)
- Tribonacci 39.2(107)
- vector recurrence sequences PVI(63)
- Wolstenholme set of units VIII(213)

roots (zeroes; and, of, with)
- Bernoulli method for solving holomorphic function equations 42.1(55)
- bracket function equation 29.3(194)
- characteristic equations
  - distinct non-positive 25.4(368)
  - limits of ratios of consecutive terms of recursive sequences 19.1(1) MRFS(166)
  - matrices 48.4(317)
  - n^{th} order 2.1(67)
  - products 14.2(159)
  - products of two roots 19.4(336)
  - system of differential equations 23.4(359)
  - trigonometric 20.3(219)

SUBJECT INDEX
R

roots (zeroes; and, of, with)
- coefficients relationships 4.2(139)
- congruence equation in an algebraic number field PI(257)
- cube roots
  - and Rédei polynomials 50.3(252)
  - of various integers 50.3(252)
- denominators of generating functions 21.1(13)
- Euler totient equation 28.2(162)
- in special, SL_2 (C) and general linear, GL_2 (C) groups 27.5(386)
- n^{th} degree polynomials 14.3(233) PI(193)
- nth roots of α and β 38.1(17)
- number of roots of
  - equations in finite groups 39.4(290)
  - iterated sequences of functions 27.2(116)
- polynomial equations
  - approximation of complex roots 25.2(137)
  - Bernoulli method for solving 42.1(55)
  - cubic MRFS(166)
  - cyclotomy-generated of the Fibonacci type 29.2(150) PI(81)
  - discriminants of nth degree 20.4(363)
  - E-algorithm for solving 42.2(98)
  - Fibonacci-type 42.4(341)
  - guessing exact from approximations 23.1(80)
  - Hermite 33.2(131)
  - isolating real roots PIII(1)
  - n^{th} degree MRFS(166)
  - quadratic MRFS(166)
  - 2nd degree with interlaced zeroes 48.3(209)
  - simultaneous determination of polynomial roots 21.3(173)
  - sums of powers of roots
    - cubic 5.3(267)
    - nth order 2.2(119) 8.2(221)
    - p^{th} powers for nth order 32.3(277)
    - quadratic 4.2(170)
- positive of a sum of reciprocals of linear polynomials 19.1(56)
- primitive 10.2(163,182) 11.2(159) 14.5(391) 15.4(347,353) 19.2(110) 20.2(111) 26.1(46) 28.1(79) 29.1(66) 30.4(295,322) 37.1(77) 38.3(244) 45.1(64) PII(113)
- quadratic equations with
  - coefficients in arithmetic progression 29.4(343)
  - rational roots PV(449)
- sequences undergoing various convolutions 32.4(369)
- smallest related to λ-Bell particles in lattice spaces 21.3(196)
- square roots and Rédei polynomials 50.3(252)
- three variable Diophantine equation in quintic rings PXI(129)
- unity 15.1(9) 20.4(363) 29.2(150) 33.5(412) 46/47.1(48) PXIII(11)
- various multinomial recurrence equations 18.1(36)

SUBJECT INDEX

R

Rothe's formula 49.4(320)
Ruskey's open problems 53.2(112)

S

Salschützian theorems 1.1(55)
searching (and/or sorting) topics 2.3(169) 4.3(265) 8.1(6) 10.2(113) 10.4(422) 13.4(295) 19.2(131) 19.4(347) MRFS(137) PIV(69) PV(345) PVII(9,463) PVIII(219)
sequences (Also see under numbers)
A013583 of Sloane 39.1(75)
absorption 17.3(275)
abundant numbers 22.4(349)
Aitken P.I(181)
Alavi PXII(197)
Alcuin 51.2(151)
almost power free 46/47.4(366)
arithmetic (progressions) 5.3(286) 8.3(317) 14.2(147) 19.3(219,240,280) 19.5(426) 21.1(26) 22.3(194) 26.1(20) 27.2(153) 29.4(343) 32.2(108) 33.3(218) 40.2(136) 46/47.1(10) PV(569) PVII(327) PXIII(355)

S

sequences (Also see under numbers)
associated Lehmer 53.3(221)
associated Lucas 53.3(221)
Atanassov 33.1(9)
autocorrelation 32.4(356)
balancing 48.2(121)
basic 13.1(56) PIII(299)
Beatty 46/47.1(62) 49.2(151) 49.3(194) 53.3(230) PXIII(23) PXV(175)
Benford 49.2(134)
Bell PIII(299)
beta 36.5(396,457) 37.1(21) PIII(325)
binary 41.4(360) 44.3(216) PVIII(121)
binary Ciphering PIII(89)
binomial coefficient 5.4(325)
bounding 40.3(260)
Bunder 52.2(172,175)
Carlitz 31.2(105)
Catalan 14.5(395)
Chebyshev 13.1(19)
circular seating PXII(203)
combinatorial 16.2(113) 24.3(209) 26.1(70)
complementary 3.3(177) 4.1(1) 48.4(343)
complements 45.3(254)
complete 1.1(3) 1.3(1) 2.1(1) 7.5(464) 9.2(177) 10.1(103) 10.5(551) 11.3(317) 11.4(387,443) 16.1(19) 17.4(358) 27.5(409) 30.4(295)
complete Padovan 45.1(64)
counting 18.1(47) 25.1(11)
crisscross 51.3(218)

SUBJECT INDEX
S

sequences (Also see under numbers)
derangement 16.3(255)
derivative 31.3(194) 35.1(19) 43.4(290) PVII(115)
Descartes PXI(199)
diagonal 16.1(33) 49.1(51)
discrete valuation PVII(133)
divergent 39.2(101)
divisibility 16.6(541) 17.1(13) 18.3(193) 23.2(126) 26.2(169) 26.4(366) 28.2(181) 35.1(9) 36.5(419,463) 37.2(145) 38.3(194) PIII(7,181) PIV(9) PVIII(1)
D'Ocagne sequences 38.5(446)
Ducci 20.1(33) 20.2(97) 22.2(152) 25.2(174) 26.2(141) 26.3(195) 28.3(259) 28.4(302) 33.4(313) 35.3(269) 45.2(115,155) 49.1(34) 49.2(155) 50.3(265) 50.4(326) 51.2(137) 52.1(32)
eigen- of difference equations 52.1(39)
escalator 46/47.2(98)
exponential-11.4(429)
Fahr/Rigel sequences 48.4(363)
far-difference 52.3(243)
Farey-13.1(1,31) 13.3(255) 14.5(389) 15.2(153) 18.2(97) 20.3(242) 40.2(170) MRFS(1) PVII(333) PXI(167)
Fermat 39.5(439)
Fibonacci quilt 54.4(348)
Fielder's PIX(xxix)
F-L PIX(297) PXI(265) PXIII(139)
$G_{i,k}$ 16.2(166)
g-base 41.3(253)
general 2.1(59) 4.1(1) 6.5(44) 6.6(322) 13.3(193) 17.3(193) 27.1(49)
generating 15.2(178) 20.4(299)
geometric 9.2(147) 10.6(635) 14.1(78) 16.2(152) 18.2(126) 22.4(354) 26.1(20) 42.3(205) PVIII(233)
geometrical line 39.5(419)
Gijswijt PXV(219)
golden 29.3(217) 33.2(113) 38.5(425,432) PIII(325) PVI(73,339)
good 25.2(161)
Gould’s PXII(35)
(H-L)/K 17.1(58) 17.3(264)
harmonic 21.1(29)
Hofstadter’s 46/47.1(62) 49.3(227)
Hoggatt 25.4(322) PIII(77)
homeomorphisms 4.1(1) 4.3(249)
Hosoya 50.2(163)
integer 38.4(317) 49.4(362) PXV(219)
integration PVIII(129)
Jacobsthal Fibonacci line 39.3(194)
Jacobsthal Lucas line 39.3(194)
Jacobsthal polynomial line 39.3(194)

SUBJECT INDEX
S

sequences (Also see under numbers)
- J-K strings PXII(115)
- L PXI(159)
- lacunary 41.1(41) PXI(109)
- Lamé: 44.4(335)
- Lehmer 31.2(105) 41.2(122) 44.3(202) 51.3(194)
- Lens 49.2(110)
- line 35.2(111) 40.5(438)
- linear recurring and *p*-adic valuation of 54.2(118)
- logarithms 8.5(482) 11.3(292)
- lower and upper Wythoff 53.3(230)
- lunal PXI(199)
- Mittag-Leffler expansions 44.3(264)
- miscellaneous (and, concerning)
  - Aitken acceleration 45.1(64)
  - bracket function of multiples of
    - golden number 17.1(84)
    - irrational numbers 28.3(204)
  - Burgstahler problem 40.3(194)
  - complex numbers MRFS(223)
  - composition 20.2(132)
  - constructed from 4 real numbers 23.1(21)
  - convolution 32.4(369) PIX(267)
  - covering *n* 46/47.1(79)
  - cubic recurrence 22.4(332)
  - decimated 33.5(407) PVI(53)
  - decreasing sequence of real numbers 6.6(335)
  - expansions of real numbers 34.4(356)
  - from
    - binomials and coefficients from the Maclaurin expansion of tan(x) 40.3(194)
    - difference triangles 33.5(441)
    - linear recurrences 18.1(73) 18.2(97) 19.4(318) 24.4(349) 29.4(304) 33.2(135) 33.4(363) MRFS(223) PI(273)
    - reflections in multiple glass plates PV(379)
    - Riordan arrays 40.3(247)
    - square and cube root functions 33.1(41)
    - sums of differences of a sequence 44.2(166)
  - general Horadam-like 18.1(73)
  - generalized recursive 30.2(103)
  - generated by an exponential function 7.4(437)
  - good 25.2(161)
  - impulse response PVI(53)
  - incomplete 10.6(635)

SUBJECT INDEX
S

sequences (Also see under numbers)
- miscellaneous (and, concerning)
  - integer sequences (and, concerning)
    - binary set 19.4(351)
    - combinatorial aspects 20.1(44)
    - digit function set 22.2(105)
    - from polynomials 16.2(128)
    - generating functions 19.3(208)
    - having the $P_{r,k}$ property 23.1(36)
    - large 28.3(200)
    - missing from the sequence of sums of Jacobsthal numbers 10.5(499)
    - 3-parameter 6.3(64)
  - Kentucky PXVI/52.5(68) 54.4(348)
  - L^p-discrepancy 26.2(157)
  - Lemoine-Katai algorithm 30.4(344)
  - line- PV(441)
  - Moesser's process 24.4(349)
  - monotonic 22.4(350) 23.2(106)
  - multiplication of 16.1(27)
  - p-adic expansions of *n*th order recurrence sequences 30.2(139)
  - partitions 20.2(132)
  - periodicity 48.2(175)
  - points on a circle PI(293)
  - polynomials from a commutative field PI(235)
  - problem of Gould MRFS(82)
  - quotients formed from a sequence 27.1(70)
  - s-additive 29.3(209)
  - self-generating 17.1(84) 19.3(208)
  - self-similar 54.1(72)
  - Simson's rule 20.3(252)
  - spectral 18.2(97)
  - squares of linear recurrence sequences 33.4(352)
  - Stern's diatomic PXVI/52.5(168)
  - subsequences of a recurrent sequence 43.1(70) PVII(43)
  - sums of roots 33.3(240)
  - ternary PVII(77)
  - 3rd order 30.2(98)
  - tower 23.2(106)
  - two-number game 25.2(174)
  - two-sided PV(159)
  - uniformly distributed 15.3(209,265)
  - unimodular 10.5(523)
  - vector PVI(63)
  - with common terms PIV(177)
  - with no isolated odd integers 34.2(152)
- missing volume 50.1(19)

SUBJECT INDEX
S

sequences (Also see under numbers)
- moments 49.1(66) PXIII(187)
- monochromatic 53.1(53)
- Monzingo 29.3(256)
- Morgan-Voyce line 40.1(59)
- Morgan-Voyce Lucas line 39.3(194)
- multiplicity 35.1(9)
- Morse code 41.1(31)
- Morse-Thue PXI(67) PXII(35)
- Narayana's Cow 54.3(204)
- nested 22.4(310) 45.3(202)
- p-regular 41.2(156)
- Padovan 44.4(335) PXIII(345)
- parity 38.3(264)
- Partial Boolean Product PXV(235)
- perfect 4.2(184) 6.2(135) 6.5(108) 10.4(377)
- periods and periodic topics (concerning, for)
  - bracelets
    - basics 7.3(287)
    - 1967 - 5.5(477)
    - 60 digit 7.3(287)
  - definition of a periodic number 22.3(218)
  - sequence
    - generating periodic linear recurrence sequences 35.1(24)
    - hypercomplex system of 2nd ordersequences PVII(337)
    - period
      - general order liner recurrence sequence PVI(505)
      - length of 20.4(354)
      - 2nd order liner recurrence sequence PVII(43) 54.2(105)
      - 3nd order liner recurrence sequence PVII(43) 54.2(105)
- periods and periodic topics (concerning, for)
  - sequence
    - not purely periodic 8.3(264)
    - over a ring 14.3(210)
    - purely periodic 2nd order recurrence sequence 46/47.2(160)
    - Putnam examination 13.2(145)
    - that is a generating function 15.2(178)
- permutation 10.5(531) 18.4(347)
- Perrin 44.4(335) PXIII(55)
- Pillai 53.3(221)
- polynomial 13.1(29)
- positive linear recurrence 49.2(116)
- power 50.2(175)
- powers 12.3(281) 28.1(60) 29.4(329) 38.1(35)
- Q 12.1(11)
- primorial plus one 46/47.4(366)

SUBJECT INDEX
S

sequences (Also see under numbers)
quasi-periodic 53.2(112)
quotient PIX(159)
ratio PXI(85)
RATS 39.2(101) PVIII(83)
regular 46/47.1(10)
RF PIX(159)
rhythmic 43.3(262)
rounded 41.2(133)
(s,b)-Generacci 54.4(348)
selection PVIII(219)
self-inverse 43.1(46)
special totient PXIII(355)
spectrum of a real number 43.4(299)
stable 34.4(298) 42.2(114) 49.3(201) PVII(49)
stationary 46/47.2(146)
Stern's diatomic 49.3(220) PXII(35)
Sylvester 54.1(65)
symmetric 13.1(33) 29.4(298) PII(17)
(2,F) 36.5(448)
Tojaaldi PXV(63)
Thue-Morse PXIV(91)
Tojaaldi PXIV(25)
uniformly distributed 22.1(76) 29.3(230)
van der Corput 50.3(235)
Van Eck PXV(219)
weighted 13.4(303)
Wythoff 49.2(151) 49.3(194) PXIII(161)
zero-one 12.1(1) 12.4(317) 15.1(49) 15.3(205,231,246) 16.1(84) 17.3(212) 18.2(177) 24.2(178) 26.3(233) 29.2(157)
set theory topics 1.3(43) 8.4(365) 29.3(239) 12.4(363) 24.2(150) 48.2(114) MRFS(145) PVI(23,31)
series (Also see under numbers and sequences)
André-Jeannin 38.5(420)
Dirichlet 3.3(199) 39.5(409) 46/47.3(268) PXVI/52.5(205)
Eisenstein 45.4(291)
Engel 27.1(49)
finite series inversions 44.4(302)
harmonic 41.2(152) 48.4(343)
hypergeometric 50.1(27)
Hurwitz 31.1(44) 32.1(79)
infinite 38.5(420)
Lambert 2.4(241) 5.5(401) 7.1(23) 9.3(299) 10.2(199) 26.2(98) 27.5(424) 28.3(223) 35.1(68) 37.3(208) 44.4(316) PI(163)
Laurent PXV(77)
Lüroth 27.1(49)

SUBJECT INDEX
S

series (Also see under numbers and sequences)
power 39.4(358)
Sylvester 27.1(49)
theta 41.3(279)
transformations 28.2(166)
2-adic 32.5(397)
well poised 50.1(27)
zeta 43.1(3,31)
shuffle product 41.5(421)
sieve topics 6.4(261) 7.3(315) 8.4(372) 11.3(247) 12.4(393) 37.4(361) 42.1(38) PVII(295)
silver means and quitting probabilities 53.2(130)
Sophie Germain primes 40.5(435)
spectral theory topics 38.5(384) 50.4(313)
splines 48.3(236)
standard deviation and balancing-like numbers PXVI/52.5(187)
star-like ladders 39.3(211)
Star of David diagram 49.1(10)
statistic on a set 46/47.1(73)
statistics: partitions 52.1(10)
Stern-Brocot trees PXI(167)
Stirling's formula 40.4(295) 52.4(321)
Stolarsky arraays PXV(175)
Stolarsky interspersion 50.2(106)
strings 31.1(2) 32.2(98) 33.2(113) 33.4(368) 34.3(200) 35.3(240) 43.4(339) 45.3(233) 48.2(168) 52.4(331) PVI(173,321) PXV(193) PXVI/52.5(168)
subscripts 1.3(15) 3.2(147) 3.3(233) 4.2(151) 4.3(217) 5.1(89) 6.4(299) 8.1(49) 9.1(35) 11.4(420,441) 12.1(11) 12.4(349) 13.4(289) 14.5(453) 19.1(14) 20.4(289) 21.4(253) 22.1(1) 29.4(364) 34.3(271) 38.2(104) PIV(51) PV(169) PVII(43)
subtractive Euclidean algorithm 39.4(320)
sums (and, of) (Also see under identities and series)
Abel partial summation 8.4(375)
binomials and Catalan numbers 50.1(62)
bracket function 15.1(78) MRFS(172)
Brahmagupta 34.1(30)
complimentary sequences 48.4(343)
Dedekind 38.3(223) 40.2(170) 42.3(250,274)
derangements 16.3(255)
Dedekind 43.2(122) 48.3(260) 49.4(348)
diagonal PIX(101,187,213) 43.2(124,170) 44.1(13)
digits 11.3(332) 14.1(17) 29.2(145) 31.4(341) 32.3(207) 34.3(240) 41.5(441) PV(263) PVII(405)
Euler 36.2(154) 44.1(39)
geometric 3.3(209) 35.1(62)
Hadamard product 35.2(135) PXIII(109)
harmonic 15.2(116) 21.1(29)

sums (and, of) (Also see under identities and series)
- Hoggatt 27.2(160) P.III(77)
- hyperbolic 14.3(193,215) 15.4(293) 33.1(32)
- hypergeometric 43.1(31)
- identities for 2nd order recurrences 46/47.4(316)
- in Pascal's triangle 50.4(337)
- involving
  - arctangent 14.5(385) 27.5(424) 30.4(290) 33.1(32) 46/47.1(32)
  - arithmetic/geometric progressions 33.3(218) 35.1(62) 38.1(56) 42.3(205)
  - Bernoulli numbers 44.1(39) 46/47.2(140)
  - trigonometric functions 14.2(117)
- Kloosterman 49.4(348)
- Kronecker products PXIII(211)
- Lehmer 35.3(252)
- Melham 46/47.2(107) 46/47.3(206)
- miscellaneous (and, for, relating to)
  - alphabets 34.5(386)
  - Cholesky matrix elements 29.2(164)
  - columns from Pascal-de-Moivre triangles 36.1(20)
  - Dedekind 22.3(266)
  - elements from a
    - montone increasing sequence 33.5(392)
    - ring PVIII(213)
  - Farey fractions PVII(333)
  - finite series inversion 49.2(158)
  - functions
    - composite functions 25.3(229)
    - elliptic functions 15.4(293)
    - exponential generating 29.4(351)
    - factorial functions 16.1(53)
    - gamma function 17.4(299)
    - generalized circular 22.1(61)
    - hyperbolic functions 15.4(293)
    - periodic PV(49)
    - trigonometric functions 15.4(293) 50.3(217) PI(185)
  - Gauss' triangular number theorem 40.4(365)
  - Legendre symbols 28.1(56)
  - maximal and minimal from sets of non-negative integers 12.4(373)
  - multiple sums of products 29.4(351)
  - 1967 - 5.5(472,474)
  - Perron matrix elements 7.4(394)
  - π 44.2(141)
  - polygonal numbers 52.4(336)
  - powers 27.5(402) 29.3(275) 32.5(407) MRFS(22)

SUBJECT INDEX
S

sums (and, of) (Also see under identities and series)
- miscellaneous (and, for, relating to)
  - products of
    - digits of *n* 19.4(340)
    - elements of recursive sequences 16.1(27)
    - $(1 - x^n)$ 20.3(256)
  - 3rd order recurrences PI(185)
- Moibius 46/47.4(341)
- multiple 9.1(28) 10.3(281) 14.1(35) 17.3(228) 18.1(58) 19.1(69) 21.2(111) 27.3(267) PXI(109) PXII(285)
- of products 14.3(265)
- Pierce expansions 22.4(332) 24.1(22) 32.5(416) 33.2(153) 36.2(146) 37.3(198)
- powers & roots 2.2(119) 4.2(170) 6.2(157) 8.2(221) 12.2(196) 18.1(35) 19.2(177) 24.3(194) 28.1(60) 32.3(271) 33.2(98) 34.3(244) 36.5(435) 37.2(135) 37.4(315) 38.3(254) PV(123) PVI(93)
- products of reciprocals of trigonometric functions 54.3(24-87-252; listed as 196-203)
- Ramanujan PV(85) PXV(41)
- reciprocals
  - Brahmagupta polynomials 36.1(34)
  - Chebyshev polynomials 33.3(194)
  - factorial 33.2(142)
  - generalized Pell-like 15.4(356)
  - integers 27.1(49)
  - Powers 51.2(163)
  - powers of 2 - 33.2(142)
  - prime numbers 23.4(364) PV(417)
  - 2 raised to Fibonacci powers generalized 26.1(40)
- rising diagonal 39.5(451) 40.5(405,417)
- row PIX(187) PXII(255)
- squares
  - iteration algorithms for sum of 2 and 3 - 12.1(83)
  - 1967 as a sum of 2 - 5.2(208)
  - 1967 as a sum of 3 - 7.5(538) 8.5(498)
  - sums of consecutive squares PVI(137)
  - sums of 3 squares 31.2(129) 44.1(71)
  - sums of 4 squares 41.3(224)
- Sylvester PVIII(155)
- using
  - binomial coefficients 14.3(249) 16.4(354) 17.4(299) 29.3(249) 31.3(256) 33.4(304) 38.1(79) 43.1(31) 46/47.1(48) PVII(185) PVIII(251)
  - multinomial coefficients 3.2(95) 14.5(427)

swappage problem 49.2(151)

Sylvester
- matrix of two polynomials 41.2(108)
- sequence 54.1(65)
- theorem of 54.1(44)

systems of equations 41.4(345)

SUBJECT INDEX
T

Taylor functional P.VII(449)
Terquem problem 5.1(59) PXIII(45)
3x + 1 problem 53.2(168)
tiling (and, for)
    binomials coefficients 48.4(290) 52.2(121)
    bracelets PXIII(153)
    chessboards PXVI/52.5(102)
    color compositions 51.2(130)
    combinatorial identities PXV(13)
    Cuisenaire rods PVI(165)
    cylinders PXIV(11)
    dominoes (and)
        6x6 19.3(219)
        rectangles 18.1(24) 27.4(323)
        profiles 21.4(302)
        recurrence relations PXVI/52.5(102)
    double PXIII(237)
    feudominoes 26.3(205)
    fibonomials PXVI/52.5(28)
    golden PVIII(11)
    hyperbolas 16.1(37)
    Jacobsthal numbers 54.4(335)
    möbius strip PXIV(11)
    numbers of tiles PXII(11)
    Padovan PXVI/52.5(102)
    Penrose tiles 36.1(45)
    planes with polygons 19.5(437)
    polyominoes 26.3(205)
    power series 28.3(266)
    quarter plane 26.3(205)
    rectangles 26.3(205) 51.4(348) 53.3(218) PXIV(11)
    recurrence relations PXVI/52.5(102)
    squares PXVI/52.5(102)
    3-color PXIII(237)
    trains PVI(165)
    two toned and combinatorial identities 49.4(290)
topological topics (and)
    congruences and algebraic surfaces 33.3(258)
    convex sets 48.1(77)
    covering topics 22.1(42) 31.2(162) 33.4(363) 46/47.1(79) PII(143)
    embedding of binary trees 32.4(329)
    finite sets 13.4(356) 17.2(97)
    Hausdorff dimension35.3(206) PV(229)
    index 11.3(255) 14.2(173)
    invariance 28.3(240)
tournaments 46/47.3(241)

trains PVI(165)
transforms
    Aitken 36.1(68) 37.3(203)
    binomial 32.5(412)36.3(287) 46/47.4(326)
    Borel 32.5(412)
    bracket function 32.2(176) 35.2(156) 37.3(233)
    Fourier 34.4(323)
    H-Convolution 13.4(357)
    Halley 37.3(203)
    Laplace 9.1(41) 38.5(395) PXIII(211)
    Legendre PVII(221)
    linear fractional 42.1(20)
    Mellin-Perron PV(263)
    misc PV(159,169)
    Newton-Raphson 37.3(203)
    Poisson PVII(311)
    secant 37.3(203)
    triangle PIX(247)
    Z- 11.5(545) 36.3(211) MRFS(75) PIV(77) PVIII(121) PXIII(211) PXIV(237) PXV(77)
traveling salesman problem PXIII(45)
trees (and)
    b-adic PIV(127) PV(273)
    binary
        asymmetric PVII(377)
        balanced PV(345)
        basics 11.4(429)
        complete PIII(335)
        immortal PVII(377)
        universal 13.3(215)
        partitions 34.3(194)
        topological embedding 32.4(329)
    Calkin-Wilf tree of fractions 41.2(169)
    color 27.5(439) PIII(335)
    convolution 26.4(354) 27.5(439)
    decision PIV(247)
    digit reversals 30.2(126) 30.2(166)
    digital filtering 22.3(208)
    enteger PV(569)
    enumerating
        end labeled 13.3(252)
        plane 27.1(33)
    Euler numbers PV(585)
    Gaussian rational numbers PXVI/52.5(136)
    golden string PIII(325)
    Hofstadter 53.2(152)

trees (and)
integer PIII(335)
Mann-Shanks PVII(377)
Markoff 17.2(178)
Möbius knot PIV(257)
modular-group number PVI(487)
$n = x \star y$ 13.2(174)
n vertices 28.1(48)
natural numbers 20.2(168)
networks 32.4(329)
node sets 31.2(98)
Pascal graph 24.3(251)
planted PI(105)
population growth 14.3(277)
pores 14.4(377)
probabilistic algorithms 27.3(201)
profile numbers 17.3(259) 21.1(58)
rational number PXVI/52.5(136)
rhythmic idnfinity system 43.3(262)
rooted PIII(335)
2nd order recurrence relation PXII(115)
self-replicating systems 21.2(97)
spanning (and)
square of a circle 23.3(258)
wheels 13.1(51)
Stern-Brocot PXI(167)
3-2 17.2(151)
Varn codes 33.1(21)
triangles
balanced Steinhaus PXVI/52.5(61)
Bell MRFS(69)
Bi(Pascal) PXV(5)
Catalan 38.5(408) 40.4(299) 44.2(166) 48.1(85)
central binomial 40.4(299)
congruence class 46/47.2(115)
convolution (and, for)
convolution (and, for)
arbitrary sequences 14.2(135)
basics for sequences 11.5(511)
Catalan numbers 14.2(135) 14.5(395)
diagonal polynomials 44.1(13)
generalized Pascal 44.1(13)
inverse Pascal 14.5(395)
multinomial coefficients 11.2(131)
sequences from Pascal's triangle 14.5(395)
Cycle-Number PXV(235)

SUBJECT INDEX
T

triangles
- cyclic compositions 48.3(249)
- Delannoy PXII(285)
- DFF (and/or DFFz) 29.4(316) 30.1(62) 35.2(149) 43.4(359)
- enteger PXV(235)
- Euler's 36.4(317) 37.2(154)
- F 38.2(98)
- Fontené-Ward 7.1(23)
- generalized Steinhaus PXVI/52.5(61)
- gibonomial 53.4(340)
- Harmonic 19.3(196)
- Heronian 5.5(484) 8.5(499) 11.2(157)
- Hoggatt 27.2(160) PIII(77)
- Hosoya 50.2(163)
- I 26.1(33)
- Integer PII(207)
- lambda 40.5(405)
- modified numerical 34.2(129)
- multinomial-18.1(36) PIV(77)
- Pascal (See Pascal's triangle)
- Pascal De Moivre 36.1(20) 54.2(125)
- Pythagorean (see under Pythagorean topics)
- right 49.4(330)
- Sierpinsky PXV(5)
- square board rook polynomial PIX(101)
- trinomial 7.4(341) 12.1(47) 16.1(41) 16.5(385) 18.1(36)
- Wong & Maddocks PXIII(35)
- Wythoff PXIV(155)

Tribonacci (and)
- arrays
  - composition 20.2(122)
  - convolution 15.3(193) 18.1(51)
  - Tribonacci 15.2(140) 15.3(193) 42.4(314)
  - vector PV(441)
- Binet formulas 9.1(41) 20.2(118) 21.4(250) 22.4(327) 26.2(131) PIX(145) PXII(225)
- binomial identities 37.4(305) 54.3(204)
- congruences mod 3 52.1(16)
- compositions 20.2(122) 52.1(16)
- convergence 16.3(269)
- convolution
  - generating function for convolution sequences 18.1(51)
  - sequence 10.6(599)
  - triangle 10.6(599)
    - rising diagonal recurrence relations 10.6(599)

Tribonacci (and)
decimal
expansions and convergence 25.2(163)
fraction representations 28.2(129)
difference triangles 33.5(441)
family of polynomials 49.4(310)
function 36.2(129)
identities
bracket function PIII(57)
DeMoivre's 26.2(131)
fundamental 5.3(209) 21.4(242) 22.3(244) 26.2(144) 27.4(296) 34.5(447) 37.4(305) 46/47.1(18) PVIII(201)
integral 19.5(391)
sums 5.3(209) 15.3(268) 50.1(44) 52.1(50) 54.2(105)
lcm and periods mod *n* 46/47.4(290)
-like 49.4(298)
line sequences PV(441) PIX(145)
modified sequences 22.3(244) 26.2(131)
number
ratios 28.2(129)
representations MRFS(145) PXI(23)
numbers/sequences (and)
additive partitions 15.2(182) 18.3(220)
arithmetic, geometric and harmonic means 22.4(354)
basics 1.3(71)
Bell polynomials PXVI/52.5(54)
combinations of *n* 45.2(104)
cyclic difference patterns using a variety of Tribonacci numbers 15.2(140)
4-number game 15.2(140) 20.1(33)
generalizations
Horadam-type (and)
convergent sequences 16.3(269)
convolution sums 8.2(199)
generating function 8.2(199)
identities 10.3(231) 39.4(352) 51.3(268) PIV(299) PXII(225)
periodicity mod *m* 11.2(163)
roots of the characteristic equation 16.3(269) 48.1(21)
sums PIV(299)
(2,T) 35.4(358)
generalized triangle 50.1(44)
generating functions
ordinary 10.3(271) 11.1(15) 15.3(193) 19.5(391) 22.3(244) 45.2(104) 52.1(50)
geometry of 3 externally tangent circles 21.4(250)
lexicographic ordering 20.3(193)
multinomial coefficients 11.2(131)
non-homogeneous Tribonacci numbers 17.1(80)

SUBJECT INDEX
T

Tribonacci (and)
- numbers/sequences (and)
  - number of consecutive successes in an experiment 20.1(28)
  - partitions 15.2(182) 18.3(220)
  - Pascal topics
    - diagonal sequences in a generalized triangle 13.2(134)
    - -like triangle 46/47.1(18)
    - pyramid 15.3(268)
  - periodic topics
    - greatest prime factor sequence 48.4(358)
    - mod n 16.4(344)
    - mod p 46/47.4(290) 48.3(228)
    - mod $p \equiv 1 \pmod 3$ 48.3(228)
    - mod p^2 46/47.4(290)
  - periodicity of last digits 2.4(260)
  - prime subscripts 2.4(260)
  - probability generating function of waiting times 21.4(242)
  - Pythagorean triples 9.3(307)
  - Q-analogue 20.4(289)
  - sequence transformations 20.4(289)
  - silver rectangle 1.3(71)
  - squares PVII(295)
  - 3rd order coupled sequences 44.1(26)
  - Zeckendorf representations 20.3(193) 27.4(338) 49.1(4) PXI(23)
- polynomials
  - coefficient array 11.5(457)
  - convolution triangle 10..6(599)
  - generalized coefficients 35.2(160)
  - identities 15.1(42) 51.3(268)
  - Zeckendorf representations 11.4(399)
  - zeroes 35.2(160) 48.4(324) 49.4(310)
- recurrence relations 30.1(77) 34.5(447) 39.2(107) 39.4(352)
- roots of the characteristic equation 26.2(131) 48.1(21)
- self-generating sequences 21.1(13)
- semi-Tribonacci sequences
  - deleted 6.4(261)
  - geometric sequences 18.2(126)
  - sieves 6.4(261)
- space PIX(145)
- tiling 27.4(323) 46/47.1(18)
- trees PVII(377) PXI(23)
- triangle 15.1(42) 15.4(319) 50.1(44)
- triangular numbers MRFS(67)
- 2-sided sequence 44.1(26) MRFS(145)
- vectors 49.1(3) PV(141)
- -Wieferich primes mod p_n 46/47.4(290)

SUBJECT INDEX

T

Tribonacci (and)
    Winan's conjecture for Tribonacci decimal expansions 25.2(163)
    words 42.4(314)
    Wythoff pairs
        composition array 20.2(122)
        numbers 20.4(289)
trinomial coefficients 44.2(166) PXIII(109)
twin primes 1.3(42) 6.5(81) 44.2(121)

U

umbral calculus 14.2(101) 43.1(46)

V

valuations 38.3(194) 45.3(194) PXVI/52.5(193)
Vandermonde convolutions 40.1(19)
variance and balancing-like numbers 52.5/PXVI(187)
vectors (and)
    Ducci game 43.1(53)
    Ducci sequence 45.2(115) 45.2(155)
Viète
    array 36.2(98)
    infinite products 52.1(27)
von Staudt-Clausen theorem 39.1(50)

W

walk problems 44.4(330)
Wallis' formula 40.4(295) 52.4(321)
Waring's formula 36.1(63)
Weierstrauss function 40.2(118)
Wieferich Primes PII(29) 45.3(239) 50.4(326)
Wilson's throrem 36.4(317)
words
    alpha 41.3(194)
    binary 51.2(130) PIX(137) PXI(141)
    color compositions 51.2(130)
    extraction topics 38.5(425) 45.1(76)
    infinite sequences 50.1(11)
    integer PXIII(355)
    lexicographic order 41.3(194)
    moments 41.3(194)
    primitive 41.5(421)
    Sturmian 41.3(194)
    totient sequence PXIII(355)
    up-down permutations 46/47.2(126)
    Wythoff pairs 27.1(76) 30.3(199)
    Zeckendorf array 50.1(11)
    zig-zag stack PXIII(355)

W

Wythoff
array (and)
Fibonacci trees 53.2(152)
game PXI(153)
representation of integers 45.4(304)
Self-similar sequences 54.1(72)
Zeckendorf array 33.1(3) PXIII(161)
pairs (and)
binary cell division PXIII(257)
extensions 18.1(28)
game of Nim 14.4(380) 15.1(85)
generalized 17.3(198) 23.4(308)
generating 27.1(76)
identities 17.1(84) 18.1(28) 30.3(199)
integer representations 17.4(306)
recurrence relations 16.5(472)
sequence transformations 20.4(289)
sequences PV(429)
Stolarsky array MRFS(134)
Wythoff game 16.2(147) 17.3(198)

Z

Z-
coefficients 26.1(33)
densities 36.3(263)
Zeckendorf (representations, theorem) (and)
arithmetic 51.3(249) PVII(129)
arrays (and)
k-Zeckendorf array 49.4(303) 50.1(11)
m-array PXIII(161)
number array PXIII(161)
Self-similar sequences 54.1(72)
Zeckendorf PXIV(79)
Zeckendorf-Wythoff 33.1(3) PVIII(53)
base b digit sums 51.4(319)
basics 10.6(635) 11.3(317)
binary coefficients 3.1(1)
Chebyshev polynomials 30.3(199)
code of an integer 54.4(319)
Daykin's theorem 2.3(163)
decompositions (and, for)
β-expansions 36.5(396)
integers PVI(123) PVII(105)
nF_n 37.1(21) 39.2(123)
signed 51.1(13)
density PXVI/52.5(35)

SUBJECT INDEX
Z

Zeckendorf (representations, theorem) (and)
double ended sequences 22.1(1)
dual theorem 11.3(317) 28.3(230)
expansions, representations & theorems
extracting formulas 45.1(76)
family identities 45.2(138)
generalization theorems 8.3(225) 10.1(89,95) 27.4(338) 27.5(439) 28.3(230) 36.1(3) 44.4(324)
golden sequence 29.3(217) 39.2(123)
Hoggatt sequence 25.4(322)
index 49.3(211)
integer arithmetic 41.5(405)
integer sets with all members containing F_k 52.4(331)
integers from ratios of Fibonacci numbers 34.5(444)
least significant digit 34.2(147)
lexicographic order 25.4(322)
matrix 48.2(168)
multidimensional representations 49.1(4)
number of
a sum of Fibonacci numbers 53.3(230)
subscripts in the representation of *n* 39.3(256)
summands in a representation of *n* 49.2(116) PXII(317)
one-free representations 21.1(53)
partitions 29.2(120) 34.4(306)
Pell numbers PV(305)
quasi-Zeckendorf representation 50.2(106)
r-Zeckendorf 33.3(208)
representations (and, using)
fibbinary nrs 52.1(61)
r-Zeck 33.3(208)
Wythoff representations PVI(321)
take away games 8.3(225)
triple MRFS(145)
uniqueness 2.3(163)
Wythoff pairs 16.2(147) 30.3(199) 32.3(240)
zero-one representations 48.2(168)
zeta series 43.1(3)
zigzag Hasse diagrams 1.3(43)
****