

recurrence (4) would give two different values of $u_{k,n}$, both of which cannot be equal to $u_{i,n}$. Consequently, there are at most

$$5(k-1)\left(\frac{\log 4S_k}{\log \alpha}\right)^2$$

values of $u_{k,2} \in (M_k, S_k] \cap \mathbb{N}$ such that $u_{k,n} = u_{i,m}$ for some $n, m, 1 \leq i \leq k-1$. Therefore, the number of values $u_{k,2} \in (M_k, S_k] \cap \mathbb{N}$ such that $u_{k,n} \neq u_{i,m}$ for all $n, m, 1 \leq i \leq k-1$ is at least

$$S_k - M_k - 5(k-1)\left(\frac{\log 4S_k}{\log \alpha}\right)^2,$$

which is positive by (11), and hence the choice of such an $u_{k,2}$ is possible.

This induction on k shows that there are infinitely many sequences $(u_{k,n})_{n \in \mathbb{N}}$. Every natural number occurs in one of these sequences by (7). It occurs exactly once by property (P) which holds for these sequences.

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GENERALIZED PASCAL TRIANGLES AND PYRAMIDS THEIR FRACTALS, GRAPHS, AND APPLICATIONS

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This monograph was first published in Russia in 1990 and consists of seven chapters, a list of 406 references, an appendix with another 126 references, many illustrations and specific examples. Fundamental results in the book are formulated as theorems and algorithms or as equations and formulas. For more details on the contents of the book see *The Fibonacci Quarterly*, Volume 31.1, page 52.

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