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Power Fibonacci Sequences,
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Abstract

We examine integer sequences G satisfying the Fibonacci recurrence relation $G_n = G_{n-1}+G_{n-2}$ that also have the property $G \equiv 1, a, a^2, a^3, \ldots \pmod{m}$ for some modulus m. We determine those moduli m for which these power Fibonacci sequences exist and the number of such sequences for a given m. We also provide formulas for the periods of these sequences, based on the period of the Fibonacci sequence F modulo m. Finally, we establish certain sequence/subsequence relationships between power Fibonacci sequences.