Lawrence Somer and Michal Křížek
Fixed Points and Upper Bounds for the Rank of Appearance in Lucas Sequences,
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Abstract

Let $U(P,Q)$ denote the Lucas sequence satisfying the recursion relation

$$U_{n+2} = PU_{n+1} - QU_n,$$

where $U_0 = 0$, $U_1 = 1$, and P and Q are integers. Let $z(n)$, called the rank of appearance of n in $U(P,Q)$, denote the least positive integer m such that $U_m \equiv 0 \pmod{n}$. We find all fixed points n for the rank of appearance such that $z(n) = n$. We also show that $z(n) \leq 2n$ when $z(n)$ exists. This paper improves results considered by Diego Marques regarding the Fibonacci sequence.