Zbl 658.10003
Erdős, Paul; Kiss, P.; Sárközy, A.
A lower bound for the counting function of Lucas pseudoprimes. (In English)
Math. Comput. 51, No.183, 315-323 (1988). [0025-5718]

Let R be a nondegenerate Lucas sequence, i.e. a sequence $R = (r_n)_{n=0}^{\infty}$ defined by the recurrence $r_n = ar_{n-1} - br_{n-2}$ for $n > 1$, $r_0 = 0$, $r_1 = 1$, for fixed integers a and b with ab$\neq 0$, $(a, b) = 1$ and $\alpha\ /\beta$ is not a root of unity, where α and β are the roots of $x^2 - ax + b = 0$.
An odd composite positive integer n with $(n, b) = 1$ that divides the element $r_{n-(D/n)}$ of R (here $D := a^2 - 4b$ and (D/n) is the Jacobi-symbol) is called a Lucas pseudoprime with respect to the sequence R, Lpp/R for short.
In this paper it is shown that the number $R(x)$ of Lpp/R not exceeding x is bounded below by $\exp\{(\log x)^c\}$ for sufficiently large x and absolute constant c. This improves a result of *P. Kiss* [Ann. Univ. Sci. Budap. Rolando Eötvös, Sect. Math. 28(1986), 153-159 (1985; Zbl 613.10008)]. For the constant c no explicit value is given.

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Classification:
11A15 Power residues, etc.
11A25 Arithmetic functions, etc.
11B37 Recurrences

Keywords:
lower bound; counting function; Lucas sequence; recurrence; Lucas pseudoprime