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On square terms and square classes in Lehmer sequences. (Chinese. English summary) [Zbl 1124.11308]

Summary: Let $V_n(R, Q)$ be the companion Lehmer sequence with parameters $R$ and $Q$. Assume that $R$ and $Q$ are odd coprime integers such that $D = R - 4Q > 0$. In this paper, we find all odd indices $n$ such that $Q_n(R, Q)$ or $n_1 Q_n(R, Q)$ is a square, where $Q_n(R, Q) \sqrt{R} = V_n(R, Q)$ and $n_1 | n$. Therefore we improve the result of the second author [Acta Math. Sin. 46, No. 5, 897–902 (2003; Zbl 1031.11006)].

MSC:
11D61 Exponential Diophantine equations
11B39 Fibonacci and Lucas numbers and polynomials and generalizations

Keywords:
squares of order two; Lehmer squares; Jacobi symbol