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On the x-Coordinates of Pell Equations That Are Products of Two Lucas Numbers,
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Abstract

Let $\{L_n\}_{n\geq 0}$ be the sequence of Lucas numbers given by $L_0 = 2$, $L_1 = 1$, and $L_{n+2} = L_{n+1} + L_n$ for all $n \geq 0$. In this paper, for an integer $d \geq 2$ that is square-free, we show that there is at most one value of the positive integer x participating in the Pell equation $x^2 - dy^2 = \pm 1$, which is a product of two Lucas numbers, with a few exceptions that we completely characterize.