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On X-Coordinates of Pell Equations that Are Repdigits,
Fibonacci Quart. **56** (2018), no. 1, 52–62.

Abstract

Let $b \geq 2$ be a given integer. In this paper, we show that there are only finitely many positive integers d that are not squares, such that the Pell equation $X^2 - dY^2 = 1$ has two positive integer solutions (X, Y) with the property that their X-coordinates are base b-repdigits. Recall that a base b-repdigit is a positive integer whose digits have the same value when written in base b. We also give an upper bound on the largest such d in terms of b.