

On k -generalized Fibonacci numbers which are perfect powers of Lucas numbers

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Abstract. Let $(F_n^{(k)})$ and (L_n) be the k -generalized Fibonacci and Lucas sequences, respectively. In this paper, we look at k -generalized Fibonacci numbers which are perfect powers of exponent larger than 1 of Lucas numbers. That is, we deal with the Diophantine equation

$$F_n^{(k)} = L_m^a$$

in non-negative integers k, n, m, a , with $k \geq 3$, $m \geq 4$ and $a \geq 2$. We show that this equation has no solution under these conditions. The proof depends on lower bounds for linear forms in logarithms and some tools from Diophantine approximation.

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