

On the Diophantine equation $F_n = F_l^k(F_l^m - 1)$

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Abstract. The sequence $\{F_t\}_{t=0}^\infty$ refers to the Fibonacci sequence, defined by the recurrence formula $F_t = F_{t-1} + F_{t-2}$, for $t \geq 2$, with the initial conditions $F_0 = 0$ and $F_1 = 1$. In this paper, we establish that the only solution to the Diophantine equation

$$F_n = F_l^k(F_l^m - 1)$$

is $(n, l, k, m) = (6, 3, 3, 1)$, where $n, m \geq 1$, $k \geq 2$, and $l \geq 3$.

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