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The Order of Appearance of Integers at Most One Away From Fibonacci Numbers,

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Abstract

Let F_n be the n th Fibonacci number. The order of appearance $z(n)$ of a natural number n is defined as the smallest natural number k such that n divides F_k . For instance, $z(F_m \pm 1) > m = z(F_m)$, for all $m \geq 5$. In this paper, among other things, we provide explicit forms for $z(F_m \pm 1)$ depending on the class of m modulo 4. In particular, $z(F_m \pm 1) \geq \frac{m^2}{2} - 2$, for $m \equiv 0 \pmod{4}$.