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Extraordinary Subsets: A Generalization,

Abstract

For $n$ a positive integer, a subset $S$ of $[n] (= \{1, 2, 3, \ldots, n\})$ is called extraordinary if $|S|$ is equal to the smallest element of $S$. The number of such subsets $S$, for a given $n$, is counted by $F_n$, the $n$th Fibonacci number.

For positive integers $k$, $n$, where $1 < k \leq n$, we now investigate those subsets $S$ of $[n]$, where $|S|$ is equal to the $k$th smallest element of $S$. We call such subsets $S$ $k$-extraordinary.