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Abstract

A set A of positive integers is said to be Schreier if either $A = \emptyset$ or $\min A \geq |A|$. We give a bijective map to prove the recurrence of the sequence $(|\mathcal{K}_{n,p,q}|)_{n=1}^{\infty}$ (for fixed $p \geq 1$ and $q \geq 2$), where

$$\mathcal{K}_{n,p,q} = \{A \subset \{1, \ldots, n\} : \text{either } A = \emptyset \text{ or } (\max A - \max_2 A = p \text{ and } \min A \geq |A| \geq q)\}$$

and $\max_2 A$ is the second largest integer in A, given that $|A| \geq 2$. When $p = 1$ and $q = 2$, we have that $(|\mathcal{K}_{n,1,2}|)_{n=1}^{\infty}$ is the Fibonacci sequence. As a corollary, we obtain a new combinatorial interpretation for the sequence $(F_n + n)_{n=1}^{\infty}$.