PROBLEM FOR SOLUTION

P. 162. Let G be a finite abelian group, written additively, and S a subset of G. S is said to be a sum-free set in G if $(S + S) \cap S = \phi$. Let $\lambda(G)$ denote the largest possible order of a sum-free set in G.

For which abelian groups G does there exist a sum-free set S such that (i) $|S| = \lambda(G)$

and (ii) $|S + S| = \frac{\lambda(G)[\lambda(G) + 1]}{2}$?

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SOLUTIONS

P. 154. Let n identical weighted coins, each falling heads with probability x, be tossed, and let $p_i(x)$ be the probability that exactly i of them fall heads. Evaluate

$$f_n = \min_{0 \leq x \leq 1} \max_{i = 0, 1, \ldots, n} p_i(x)$$

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Solution by D. Ž. Djoković, University of Waterloo

Let $f_n(x) = \max_{i = 0, 1, \ldots, n} p_i(x)$.

Since

$$p_i(x) = \binom{n}{i} x^i (1 - x)^{n-i}$$

and

$$\frac{p_i(x)}{p_{i+1}(x)} = \frac{i + 1}{n - 1} \cdot \frac{1 - x}{x} \qquad (i = 0, 1, \ldots, n - 1)$$

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