Bilkent University
Department of Mathematics

Problem Of The Month

Term: September 2024

Let $(a_n)_{n=1}^{\infty}$ and $(b_n)_{n=1}^{\infty}$ be two sequences of real numbers defined by

$$a_1 = 30, \quad b_1 = 31 \quad \text{and}$$

$$a_{n+1} - a_n = \frac{1}{b_n}, \quad b_{n+1} - b_n = \frac{1}{a_n} \quad \text{for all} \quad n \geq 1.$$

Find the smallest integer k such that $a_k \geq 60$.