

Márton Szikszai

Distinct Products in Lucas Sequences – On a Problem of Kimberling,
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Abstract

Consider the Diophantine equation

$$A \prod_{i \in I} u_i^{\alpha_i} = B \prod_{j \in J} u_j^{\beta_j}$$

in unknown non-empty disjoint subsets of natural numbers I , J and positive integer exponents α_i, β_j , where $u = (u_n)_{n=0}^{\infty}$ is a Lucas sequence and A, B are given integers. We derive effective upper bounds on $\max I$ and $\max J$ and present a method to effectively enumerate all solutions when u is given. As an application we solve a partial case of a problem of Kimberling on distinct products.