Pairwise Relative Primality of Integers and Independent Sets of Graphs

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Abstract : Let $G = (V, E)$ with $V = \{1, 2, ..., k\}$ be a graph, the k positive integers $a_1, a_2, ..., a_k$ are G-wise relatively prime if $(a_i, a_j) = 1$ for $\{i, j\} \in E$. We use an inductive approach to give an asymptotic formula for the number of k-tuples of integers that are G-wise relatively prime. An exact formula is obtained for the probability that k positive integers are G-wise relatively prime. As a corollary, we also provide an exact formula for the probability that k positive integers have exactly r relatively prime pairs.
Keywords : graph, independent set, G-wise relatively prime, probability
Conference Title : ICNTA 2023 : International Conference on Number Theory and Algebra
Conference Location : Honolulu, United States
Conference Dates : May 11-12, 2023