An Upper Bound for the Ramsey Number of a Quadrilateral versus a Complete Graph on Seven Vertices

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Abstract

Let $r(C_4, K_n)$ be the smallest integer N such that if a graph on N vertices contains no C_4, then its independence number is at least n. First we will show that there are at least six graphs on 17 vertices containing no C_4 and having independence number 5 (The existence of such graphs was first proved by G. Exoo using computer techniques in Congressus Numerantium, 59 (1987) 31-36). Next using this result, it will be shown that $r(C_4, K_7) \leq 22$, and in particular we will conclude that $r(C_4, K_7) = 21$ or 22.

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