ONE MORE TURÁN NUMBER AND RAMSEY NUMBER FOR THE LOOSE 3-UNIFORM PATH OF LENGTH THREE

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Abstract

Let $P$ denote a 3-uniform hypergraph consisting of 7 vertices $a, b, c, d, e, f, g$ and 3 edges $\{a, b, c\}, \{c, d, e\}$, and $\{e, f, g\}$. It is known that the $r$-color Ramsey number for $P$ is $R(P; r) = r + 6$ for $r \leq 9$. The proof of this result relies on a careful analysis of the Turán numbers for $P$. In this paper, we refine this analysis further and compute the fifth order Turán number for $P$, for all $n$. Using this number for $n = 16$, we confirm the formula $R(P; 10) = 16$.

Keywords: Ramsey numbers, Turán numbers.

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