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INDEPENDENT TRANSVERSAL TOTAL DOMINATION VERSUS TOTAL DOMINATION IN TREES

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Abstract

A subset of vertices in a graph G is a total dominating set if every vertex in G is adjacent to at least one vertex in this subset. The total domination number of G is the minimum cardinality of any total dominating set in G and is denoted by $\gamma_t(G)$. A total dominating set of G having nonempty intersection with all the independent sets of maximum cardinality in G is an independent transversal total dominating set. The minimum cardinality of any independent transversal total dominating set is denoted by $\gamma_{tt}(G)$. Based on the fact that for any tree T, $\gamma_t(T) \leq \gamma_{tt}(T) \leq \gamma_t(T) + 1$, in this work we give several relationships between $\gamma_{tt}(T)$ and $\gamma_t(T)$ for trees T which are leading to classify the trees which are satisfying the equality in these bounds.

Keywords: independent transversal total domination number, total domination number, independence number, trees.

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