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عنوان مقاله:

Total Roman domination and ۲-independence in trees

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خلاصه مقاله:

Let G=(V, E) be a simple graph with vertex set V and edge set E. A {\em total Roman dominating function} on a graph G is a function f:V\rightarrow \{۰,۱,۲\} satisfying the following conditions: (i) every vertex u {\color{blue}such that} f(u)=۰ is adjacent to at least one vertex v {\color{blue}such that} f(v)=۲ and (ii) the subgraph of G induced by the set of all vertices of positive weight has no isolated vertex. The weight of a total Roman dominating function f is the value, f(V)=\Sigma_{u\in V(G)}f(u). The {\em total Roman domination number} \gamma_{tR}(G) of G is the minimum weight of a total Roman dominating function of G. A subset S of V is a ۲-independent set of G if every vertex of S has at most one neighbor in S. The maximum cardinality of a ۲-independent set of G is the ۲-independence number \beta_۲(G). These two parameters are incomparable in general, however, we show that if T is a tree, then \gamma_{tR}(T)\le \frac{۳}{۲}\beta_۲(T) and we characterize all trees attaining the equality.

کلمات کلیدی:

total Roman dominating function, total Roman domination number, ۲-independent set, ۲-independence number

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