

Rainbow Dominating Sets of Graphs

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A subset of vertices D of a graph G is called a **dominating set** if every vertex in $V(G) \setminus D$ has a neighbor in D . The **upper domination number** $\Gamma(G)$ is the maximum size of a minimal dominating set of G . Given a collection $\Sigma = (D_1, \dots, D_k)$ of (not necessarily distinct) dominating sets of G , we say that Σ **admits a rainbow dominating set** if there exists a dominating set D of G and an injective function $f : D \rightarrow \{1, \dots, k\}$ such that d is in $D_{f(d)}$ for all d in D . We define **rainbow domination number** of G , $R(G)$, to be equal to the smallest k such that every collection Σ of k dominating sets of G , admits a rainbow dominating set. In this talk we discuss various computations and bounds (upper and lower) for $R(G)$ and pose several conjectures and open problems pertaining to $R(G)$.

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