

SIGNED ROMAN EDGE k -DOMINATION IN GRAPHS

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Abstract

Let $k \geq 1$ be an integer, and $G = (V, E)$ be a finite and simple graph. The closed neighborhood $N_G[e]$ of an edge e in a graph G is the set consisting of e and all edges having a common end-vertex with e . A signed Roman edge k -dominating function (SRE k DF) on a graph G is a function $f : E \rightarrow \{-1, 1, 2\}$ satisfying the conditions that (i) for every edge e of G , $\sum_{x \in N_G[e]} f(x) \geq k$ and (ii) every edge e for which $f(e) = -1$ is adjacent to at least one edge e' for which $f(e') = 2$. The minimum of the values $\sum_{e \in E} f(e)$, taken over all signed Roman edge k -dominating functions f of G is called the signed Roman edge k -domination number of G , and is denoted by $\gamma'_{sRk}(G)$. In this paper we initiate the study of the signed Roman edge k -domination in graphs and present some (sharp) bounds for this parameter.

Keywords: signed Roman edge k -dominating function, signed Roman edge k -domination number.

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