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UPPER BOUNDS ON THE SIGNED TOTAL (k, k)-DOMATIC NUMBER OF GRAPHS

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Abstract

Let G be a graph with vertex set $V(G)$, and let $f : V(G) \longrightarrow \{-1, 1\}$ be a two-valued function. If $k \geq 1$ is an integer and $\sum_{x \in N(v)} f(x) \geq k$ for each $v \in V(G)$, where $N(v)$ is the neighborhood of v, then f is a signed total k-dominating function on G. A set $\{f_1, f_2, \ldots, f_d\}$ of distinct signed total k-dominating functions on G with the property that $\sum_{i=1}^{d} f_i(x) \leq k$ for each $x \in V(G)$, is called a signed total (k, k)-dominating family (of functions) on G. The maximum number of functions in a signed total (k, k)-dominating family on G is the signed total (k, k)-domatic number of G.

In this article we mainly present upper bounds on the signed total (k, k)-domatic number, in particular for regular graphs.

Keywords: signed total (k, k)-domatic number, signed total k-dominating function, signed total k-domination number, regular graphs.

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