

Improving some bounds for multiple domination parameters in graphs

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For a graph $G = (V, E)$, the open neighborhood of a vertex $v \in V$ is $N(v) = \{u \in G \mid uv \in E(G)\}$ and the closed neighborhood is $N[v] = N(v) \cup \{v\}$. A set $S \subseteq V$ is a dominating set if each vertex in $V(G) \setminus S$ is adjacent to at least one vertex of S . Equivalently, S is a dominating set of G if $|N(v) \cap S| \geq 1$ for each $v \in V$. Several multiple counterparts of such sets are known. In particular, D is said to be a k -dominating set, if every vertex v not in D satisfies $|N(v) \cap D| \geq k$ or a k -tuple dominating set if $|N[v] \cap D| \geq k$ for each $v \in V$, or a k -tuple total dominating set if every vertex has at least k neighbours in D and etc. We believe all of these concepts can be represented by a comprehensive definition. Therefore we introduce a new domination parameter as a generalization of multiple domination parameters and we improve some results of this topic.

References

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