

On k -domination and j -dependence in graphs

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Let G be a graph and let k and j be positive integers. A subset D of the vertex set of G is a k -dominating set if every vertex not in D has at least k neighbors in D . The k -domination number $\gamma_k(G)$ is the cardinality of a smallest k -dominating set of G . A subset $I \subseteq V(G)$ is a j -dependent set of G if every vertex in I has at most $j - 1$ neighbors in I . The j -dependence number $\alpha_j(G)$ is the cardinality of a largest j -dependent set of G . In this work, we study the interaction between $\gamma_k(G)$ and $\alpha_j(G)$ in a graph G . Hereby, we generalize some known inequalities concerning these parameters and put into relation different known and new bounds on k -domination and j -dependence. Finally, we will discuss several consequences that follow from the given relations, while always highlighting the symmetry that exists between these two graph invariants.