Domination Parameters in Graphs

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Let $G = (V, E)$ be a simple graph. A set $D \subseteq V$ is a dominating set of G if each vertex not in D is adjacent to a vertex of D. The domination number of G is the size of a smallest dominating set of G. A Roman dominating function on a graph $G = (V, E)$ is defined to be a function $f: V \longrightarrow \{0,1,2\}$ satisfying the condition that every vertex u for which $f(u) = 0$ is adjacent to at least one vertex v for which $f(v) = 2$. The weight of a Roman dominating function f is the value $f(V) = \sum_{u \in V} f(u)$. The minimum weight of a Roman dominating function on a graph G is called the Roman domination number of G. We will study results on domination, Roman domination and their variants in some classes of graphs. This talk will also feature future possible ways of continuing the study of these parameters.