Roman k-tuple Domination in Graphs

Adel P. Kazemi

University of Mohaghegh Ardabili

adelpkazemi@yahoo.com

Let $G = (V, E)$ be a simple graph. For an integer $k \geq 1$, a function $f : V \to \{0, 1, 2\}$ is a Roman k-tuple dominating function if for any vertex v with $f(v) = 0$, there exist at least k vertices w in its neighborhood with $f(w) = 2$, and for any vertex v with $f(v) \neq 0$, there exist at least $k - 1$ vertices w in its neighborhood with $f(w) = 2$. The weight of a Roman k-tuple dominating function f of G is the value $f(V) = \sum_{v \in V} f(v)$. The minimum weight of a Roman k-tuple dominating function of G is its Roman k-tuple domination number.

In this talk, we study the Roman k-tuple domination number of a graph. Some of our results extend these one given by Cockayne and et al. [Roman domination in graphs, Discrete Mathematics **278** (2004) 11-22] for the Roman domination number.

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