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TWIN MINUS TOTAL DOMINATION NUMBERS IN DIRECTED GRAPHS

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Abstract

Let $D = (V, A)$ be a finite simple directed graph (shortly, digraph). A function $f : V \longrightarrow \{-1, 0, 1\}$ is called a twin minus total dominating function (TMTDF) if $f(N^-(v)) \geq 1$ and $f(N^+(v)) \geq 1$ for each vertex $v \in V$. The twin minus total domination number of D is $\gamma^*_{mt}(D) = \min\{w(f) \mid f \text{ is a TMTDF of } D\}$. In this paper, we initiate the study of twin minus total domination numbers in digraphs and we present some lower bounds for $\gamma^*_{mt}(D)$ in terms of the order, size and maximum and minimum in-degrees and out-degrees. In addition, we determine the twin minus total domination numbers of some classes of digraphs.

Keywords: twin minus total dominating function, twin minus total domination number, directed graph.

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