

CERTIFIED DOMINATION CRITICAL GRAPHS UPON VERTEX REMOVAL

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A set D of vertices of a graph $G = (V_G, E_G)$ is a *dominating set* of G if every vertex in $V_G - D$ is adjacent to at least one vertex in D . The *domination number* of a graph G , denoted by $\gamma(G)$, is the cardinality of a smallest dominating set of G . A subset $D \subseteq V_G$ is called a *certified dominating set* of G if D is a dominating set of G , and every vertex in D has either zero or at least two neighbours in $V_G - D$. The cardinality of a smallest certified dominating set of G is called the *certified domination number* of G , and it is denoted by $\gamma_{\text{cer}}(G)$. A vertex v of G is *certified critical* if $\gamma_{\text{cer}}(G - v) < \gamma_{\text{cer}}(G)$, and a graph G is *vertex certified domination critical* or *γ_{cer} -critical* if the removal of any vertex reduces its certified domination number. In this paper, we give examples and properties of certified critical vertices and vertex certified domination critical graphs. As an example of an application of certified critical vertices, we give a constructive characterisation of trees for which the smaller partite set is a minimum certified dominating set.

References

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