BOUNDING THE LOCATING-TOTAL DOMINATION NUMBER OF A TREE IN TERMS OF ITS ANNIHILATION NUMBER

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Abstract

Suppose \( G = (V, E) \) is a graph with no isolated vertex. A subset \( S \) of \( V \) is called a locating-total dominating set of \( G \) if every vertex in \( V \) is adjacent to a vertex in \( S \), and for every pair of distinct vertices \( u \) and \( v \) in \( V - S \), we have \( N(u) \cap S \neq N(v) \cap S \). The locating-total domination number of \( G \), denoted by \( \gamma_{LT}(G) \), is the minimum cardinality of a locating-total dominating set of \( G \). The annihilation number of \( G \), denoted by \( a(G) \), is the largest integer \( k \) such that the sum of the first \( k \) terms of the nondecreasing degree sequence of \( G \) is at most the number of edges in \( G \). In this paper, we show that for any tree of order \( n \geq 2 \), \( \gamma_{LT}(T) \leq a(T) + 1 \) and we characterize the trees achieving this bound.

Keywords: total domination, locating-total domination, annihilation number, tree.

2010 Mathematics Subject Classification: 05C69.
References


Received 28 November 2016
Accepted 6 May 2017