Discussiones Mathematicae
Graph Theory 41 (2021) 601–616
doi:10.7151/dmgt.2212

TRIAMETER OF GRAPHS

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Abstract

In this paper, we study a new distance parameter *triameter* of a connected graph G, which is defined as $\max\{d(u,v)+d(v,w)+d(u,w) : u,v,w \in V\}$ and is denoted by $tr(G)$. We find various upper and lower bounds on $tr(G)$ in terms of order, girth, domination parameters etc., and characterize the graphs attaining those bounds. In the process, we provide some lower bounds of (connected, total) domination numbers of a connected graph in terms of its triameter. The lower bound on total domination number was proved earlier by Henning and Yeo. We provide a shorter proof of that. Moreover, we prove Nordhaus-Gaddum type bounds on $tr(G)$ and find $tr(G)$ for some specific family of graphs.

Keywords: distance, radio k-coloring, Nordhaus-Gaddum bounds.

2010 Mathematics Subject Classification: 05C12.

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Received 5 June 2018
Revised 25 February 2019
Accepted 25 February 2019