Total Domination Dot-Critical and Dot-Stable Graphs

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Two vertices are said to be identified if they are combined to form one vertex whose neighborhood is their neighborhood union. A graph is total domination dot-critical if identifying any pair of adjacent vertices decreases the total domination number. On the other hand, a graph is total domination dot-stable if identifying any pair of adjacent vertices leaves the total domination number unchanged. Identifying any pair of vertices cannot increase the total domination number, and we show it can decrease the total domination number by at most two. Among other results, we characterize total domination dot-critical trees with total domination number three and all total domination dot-stable graphs.

Keywords: total domination, dot-critical, dot-stable, identifying