Not all γ-sets are equal, part II

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Abstract

Given a graph G, we say that $S \subseteq V(G)$ is a dominating set if every vertex in $V - S$ is adjacent to at least one vertex in S. Any dominating set of minimum cardinality is called a γ-set. For a particular graph, there may be many γ-sets, and a γ-set might satisfy a secondary criteria, such as independence. In his talk a couple of months ago, Steve Hedetniemi suggested that it might be possible for certain types of graphs to inspect every γ-set one after another to find those that satified multiple criteria and proposed the creation of a γ-graph for such a search. The γ-graph, $G[\gamma]$, of a graph G is the graph whose vertex set corresponds to the γ-sets of G and two vertices in $G[\gamma]$ are adjacent if their corresponding γ-sets, S_1 and S_2, differ only by swapping a vertex $x \in S_1$ for a vertex $y \in S_2$ where $(x, y) \in E(G)$. In this talk, we continue to look at γ-graphs corresponding to paths, cycles, and trees, and we present some results regarding the structure of such γ-graphs.