The Game Domination Number

Douglas Rall
Department of Mathematics
Furman University

Abstract

Two players, Dominator and Staller, play the *Domination Game* by taking turns choosing a vertex from a graph $G = (V, E)$. If A denotes the vertices chosen at a certain point in the game, then a vertex $x \in V - A$ can be chosen by the next player if and only if $N[A \cup \{x\}]$ contains at least one vertex that is not in $N[A]$. Dominator plays in such a way that a set of smallest cardinality is chosen; Staller uses a strategy that forces a largest possible set to be chosen. When Dominator plays first in the game the cardinality of the resulting set is called the *game domination number* of G and is denoted $\gamma_g(G)$. In this talk I will prove some relationships that exist between γ_g and γ (the ordinary domination number) and also explore the relationships between γ_g and a related invariant arising from the domination game when Staller begins.

This talk concerns joint work with Boštjan Brešar and Sandi Klavžar.