Domination Invariants of Cartesian and Direct Products of Graphs

Douglas Rall
Department of Mathematics
Furman University

Abstract

In this talk I will survey what is known about 4 domination invariants γ (the domination number), Γ (the upper domination number), γ_t (the total domination number), and Γ_t (the upper total domination number) as they are applied to Cartesian and direct products of graphs. In particular, we are interested in questions of the following type. (Here $\times$ denotes direct product and $\Box$ denotes Cartesian product.)

- Is $\gamma(G \times H) \geq \gamma(G)\,\gamma(H)$ for all pairs of graphs G and H?
- Is there a positive constant $k < 1$ such that $k \cdot \Gamma_t(G)\Gamma_t(H) \leq \Gamma_t(G \,\Box\, H)$ for all pairs of graphs G and H?