

Vizing-type bounds for graphs with forbidden induced subgraphs

Elliot Krop and Pritul Patel, Clayton State University
Gaspar Porta*, Washburn University

For any graphs G and H , we say that a bound is of Vizing-type if $\gamma(G \square H) \geq c\gamma(G)\gamma(H)$ for some constant c . We show several bounds of Vizing-type for graphs G with forbidden induced subgraphs. In particular, if G is a triangle and $K_{1,r}$ -free graph, then for any graph H , $\gamma(G \square H) \geq \frac{r}{2r-1}\gamma(G)\gamma(H)$. If G is a K_r and P_5 -free graph for some integer $r \geq 2$, then for any graph H , $\gamma(G \square H) \geq \frac{r-1}{2r-3}\gamma(G)\gamma(H)$. We do this by bounding the power of G , $\pi(G)$. We also show that if G is claw-free and P_6 -free or K_4 and P_5 -free, then for any graph H , $\gamma(G \square H) \geq \gamma(G)\gamma(H)$.

Keywords: domination number, Cartesian product of graphs, Vizing's conjecture, power of a graph