

1117-05-23

**Elliot Krop\*** (elliottkrop@clayton.edu), Clayton State University, 2000 Clayton State Boulevard, Morrow, GA 30260, and **Aziz Contractor**. *A class of graphs approaching Vizing's conjecture.*

For any graph  $G = (V, E)$ , a subset  $S \subseteq V$  *dominates*  $G$  if all vertices are contained in the closed neighborhood of  $S$ , that is  $N[S] = V$ . The minimum cardinality over all such  $S$  is called the domination number, written  $\gamma(G)$ . In 1963, V.G. Vizing conjectured that  $\gamma(G \square H) \geq \gamma(G)\gamma(H)$  where  $\square$  stands for the Cartesian product of graphs. We define classes of graphs  $\mathcal{A}_n$ , for  $n \geq 0$ , so that every graph belongs to some such class, and  $\mathcal{A}_0$  corresponds to class  $A$  of Bartsalkin and German. We prove that for any graph  $G$  in class  $\mathcal{A}_1$ ,  $\gamma(G \square H) \geq \left(\gamma(G) - \sqrt{\gamma(G)}\right) \gamma(H)$ .

Keywords: Domination number, Cartesian product of graphs, Vizing's Conjecture (Received December 03, 2015)