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THE FORCING CONVEX DOMINATION NUMBER OF A GRAPH

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Abstract: Let G be a connected graph and D a minimum convex domination set of G. A subset $T \subseteq D$ is called a forcing subset of D, if D is the unique minimum convex dominating set containing T. A forcing subset for D of minimum cardinality is a minimum forcing subset of D. The forcing convex domination number of D, denoted by $\gamma_{con}(D)$, is the cardinality of a minimum forcing subset of D. The forcing convex domination number of G, denoted by $f_{\gamma con}(G)$ and is defined by $f_{\gamma con}(G) = \min\{f_{\gamma con}(D)\}$, where the minimum is taken over all minimum convex dominating sets D in G. Some general properties satisfied by this concepts are studied. The forcing fair dominating number of certain standard graphs are determined. It is shown that for every pair a, b of integers with $0 \leq a < b$, there exists a connected graph G such that $f_{\gamma con}(G) = a$ and $\gamma_{con}(G) = b$.

Keywords and Phrases: Forcing convex domination, convex domination number, convex number.

2020 Mathematics Subject Classification: 05C69.

1. Introduction

By a graph $G = (V,E)$, we mean a finite undirected connected graph without loops or multiple edges. The order and size of G are denoted by n and m respectively. For basic definitions and terminologies we refer to [4]. Two vertices u and v are said to be *adjacent* if uv is an edge of G. The *open neighbourhood of a vertex* v in a graph G is defined as the set $N_G(v) = \{u \in V(G) : uv \in E(G)\}$, while