CONVEX AND WEAKLY CONVEX DOMINATION IN PRISM GRAPHS

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Abstract

For a given graph \( G = (V, E) \) and permutation \( \pi : V \mapsto V \) the prism \( \pi G \) of \( G \) is defined as follows: \( V(\pi G) = V(G) \cup V(G') \), where \( G' \) is a copy of \( G \), and \( E(\pi G) = E(G) \cup E(G') \cup M_\pi \), where \( M_\pi = \{ uv' : u \in V(G), v = \pi(u) \} \) and \( v' \) denotes the copy of \( v \) in \( G' \).

We study and compare the properties of convex and weakly convex dominating sets in prism graphs. In particular, we characterize prism \( \gamma_{\text{con}} \)-fixers and -doublers. We also show that the differences \( \gamma_{\text{wcon}}(G) - \gamma_{\text{wcon}}(\pi G) \) and \( \gamma_{\text{wcon}}(\pi G) - 2\gamma_{\text{wcon}}(G) \) can be arbitrarily large, and that the convex domination number of \( \pi G \) cannot be bounded in terms of \( \gamma_{\text{con}}(G) \).

Keywords: domination, prism graphs.

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References


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