ANTIPODAL DOMINATION NUMBER OF GRAPHS

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Abstract: A dominating set $S \subseteq V$ is said to be an Antipodal Dominating Set(ADS) of a connected graph G if there exist vertices $x, y \in S$ such that $d(x, y) = diam(G)$. The minimum cardinality of an ADS is called the Antipodal Domination Number(ADN), and is denoted by $\gamma_{ap}(G)$. In this paper, we determined the antipodal domination number for various graph products, bound for antipodal domination and characterize the graphs with $\gamma_{ap}(G) = 2$.

Keywords and Phrases: Antipodal Domination, Diameter.

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1. Introduction

Let $G = (V, E)$ be a graph with vertex set V and edge set E. A set $D \subseteq V$ is a **dominating set** of G if every vertex not in D is adjacent to a vertex in D. The domination number of G, denoted by $\gamma(G)$, is the minimum cardinality of a dominating set.

A thorough study of domination, with its many variations, appears in [1, 2]. We introduced a new domination parameter called Antipodal domination by imposing the antipodal condition on the dominating set [3].

Let G be a connected graph. A dominating set S of G is said to be an **Antipodal Dominating Set (ADS)** if there exist vertices $x, y \in S$ such that $d(x, y) = diam(G)$. The minimum cardinality of an ADS is called the **Antipodal Domination Number (ADN)**, and is denoted by $\gamma_{ap}(G)$.