

LIAR'S DOMINATION IN SIERPIŃSKI-LIKE GRAPHS

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Abstract: The vertex set $L \subseteq V(G)$ is a liar's dominating set if and only if it satisfies the following two conditions: (i) L double dominates every $v \in V(G)$ and (ii) for every pair u, v of distinct vertices, $|(N[u] \cup N[v]) \cap L| \geq 3$. The liar's domination number for a graph G is denoted by $\gamma_L(G)$ which is the minimum cardinality of the liar's dominating set L . Liar's domination was introduced by P. J. Slater. In a liar's dominating set it is assumed that any one protective device in its neighborhood of the intruder vertex might misreport the location of an intruder vertex in its closed neighborhood. In this paper, we determine the liar's domination set for Sierpiński-like graphs.

Keywords and Phrases: Domination, Liar's domination, Sierpiński graphs, Sierpiński cycle graphs, Sierpiński complete graphs.

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1. Introduction

Domination in graphs is a widely researched topic because of its applications in many fields. There are different variations of domination existing in literature that motivates one to explore its applications in any graph or network. In the year 2009 Slater introduced liar's domination. This concept was introduced in such a way that a network is modeled as a graph and all its vertices are the possible locations for the intruder to enter and a dominating set as a set of protection devices placed at a vertex v so that the intruder and its exact location can be detected in its closed neighbourhood even if a protection device is allowed to lie or becomes faulty.