Outer-connected Edge Domination in Graphs

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Presentation Outline

Introduction

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Working Definitions

Definition 2.1

A set $M \subseteq E(G)$ is an *edge dominating set of* G if every $u \in E(G) \backslash M$ is adjacent to some $v \in M$. The *edge domination number of* G, denoted by $\gamma_e(G)$, is the minimum cardinality of an edge dominating set of G. Any edge dominating set of G with cardinality $\gamma_e(G)$ is referred to as a γ_e*-set of* G.

Working Definitions (Cont'n)

Example 2.2

The sets $M_1 = \{a, c, f\}, M_2 = \{d, h\}$, and $M_3 = \{a, e, g, h\}$ are edge dominating sets of G in Figure 1.5. Moreover, $M_2 = \{d, h\}$ is a minimum edge dominating set of G. Thus, $\gamma_e(G) = |M_2| = 2$.

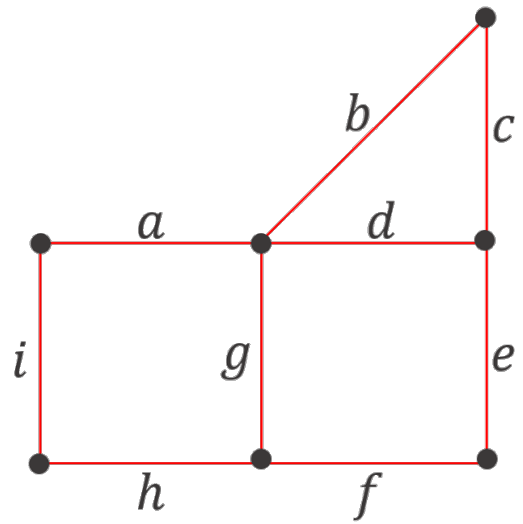

Figure 1: A graph G with $\gamma_e(G) = 2$.

Results

Remark 3.1

A set S is an outer-connected edge dominating set of a graph G if S is an edge dominating set such that $H_{E(G)\setminus S}$ does not have component isomorphic to K_2 or $S = E(G)$.

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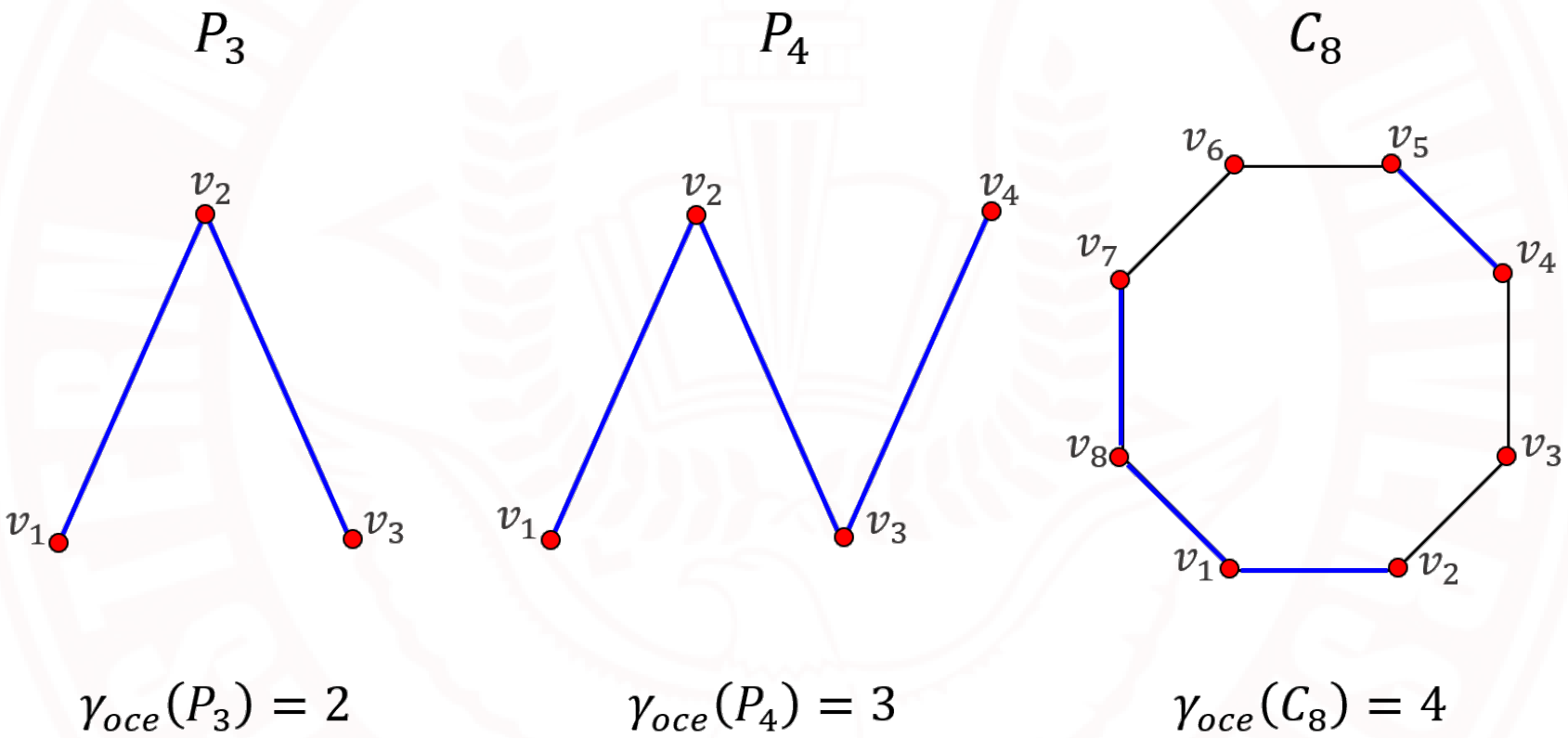
To see this, consider graphs $G_1 = P_3$, $G_2 = P_4$, and $G_3 = C_8$ in Figure 2. Then, $\gamma_{oce}(P_3) = 2, \gamma_{oce}(P_4) = 3$, and $\gamma_{oce}(C_8) = 4$.

Results (Cont'n)



$\gamma_{oce}(P_3) = 2$ $\gamma_{oce}(P_4) = 3$ $\gamma_{oce}(C_8) = 4$

Figure 2: Graphs with $\gamma_{oce}(P_3) = 2, \gamma_{oce}(P_4) = 3$, and $\gamma_{oce}(C_8) = 4$.

Recommendations

The following problems are suggested for further study:
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Thank You So Much!