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The Game of Cops and Robber on Graphs with Two Forbidden Induced Subgraphs

It is known that the class of all graphs not containing a connected graph H as an induced subgraph is cop-bounded if and only if H is a path. In this study we show that for a set $\mathcal{H} = \{H_1, H_2\}$ of two non-path connected graphs, the class of $\mathcal{H}$-free graphs, i.e. the class of all graphs not containing an element of $\mathcal{H}$ as an induced subgraph, is cop-bounded only if $\mathcal{H}$ consists of a generalized claw and a generalized net. For the reverse direction, we provide upper bounds for the cop-number of $\mathcal{H}$-free graphs for the following particular cases (1) when H_1 is the $(1, 1, a)$-claw and H_2 is the $(1, 1, b)$-net, and (2) when H_1 is the $(1, a, b)$-claw and H_2 is the $(0, b, c)$-net, where a, b, c are constant positive integers.