# TWO GRAPHS WITH A COMMON EDGE 

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#### Abstract

Let $G=G_{1} \cup G_{2}$ be the sum of two simple graphs $G_{1}, G_{2}$ having a common edge or $G=G_{1} \cup e_{1} \cup e_{2} \cup G_{2}$ be the sum of two simple disjoint graphs $G_{1}, G_{2}$ connected by two edges $e_{1}$ and $e_{2}$ which form a cycle $C_{4}$ inside $G$. We give a method of computing the determinant $\operatorname{det} A(G)$ of the adjacency matrix of $G$ by reducing the calculation of the determinant to certain subgraphs of $G_{1}$ and $G_{2}$. To show the scope and effectiveness of our method we give some examples.


Keywords: graph, adjacency matrix, determinant of graph, path, cycle.
2010 Mathematics Subject Classification: 05C50.

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