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# SEVERAL DISTANCE BASED INDICES FOR COMPLEMENT OF GRAPHS

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**Abstract:** A graph $G$ is said to have property $P$ if for every pair of its adjacent vertices $x$ and $y$ there exists a vertex $z$ such that $z$ is not adjacent to $x$ and $y$. In this paper, we establish an explicit formula to calculate the several graph indices for the complement of any graph $G$ having above property. As a corollary we obtain the several graph indices for the complement of certain derived graphs.

**Keywords and Phrases:** Topological index, distance, derived graph.

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## 1. Introduction and Preliminaries

For vertices $u, v \in V(G)$, the distance between $u$ and $v$ in $G$, denoted by $d_G(u, v)$, is the length of a shortest $(u, v)$-path in $G$ and let $d_G(v)$ be the degree of a vertex $v \in V(G)$. The *diameter* of the graph $G$ is $max\{d_G(u, v)|u, v \in V(G)\}$. A *topological index* of a graph is a real number related to the graph; it does not depend on labeling or pictorial representation of a graph. There exist several types of such indices, especially those based on vertex and edge distances. One of the most intensively studied topological indices is the Wiener index.