Study a Degree Sum Condition with Connectivity for Relative Length of Shortest Paths and Cycles

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ABSTRACT

A graph G, $p(G)$ denote the orders of a Shortest Path and $c(G)$denote the orders of a shortest cycle in$G$. For a graph G, we denote by $d_G(y)$and $k(G)$ the degree of a vertex y in G respectively.In this paper we prove that if is a 2- connected graph of order n such that $\sum_{j=1}^{3} d_G(y_j) \geq n + k(G) + 2$ for every indepent set $\{y_1, y_2, y_3\}$, then $p(G) - c(G) \leq 1$.

Keywords: Shortest path, Shortest cycle, Independent set

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