Hamilton-Connected Indices of Graphs

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Abstract

Let G be an undirected graph that is neither a path nor a cycle. Clark and Wormald defined $hc(G)$ to be the least integer m such that the iterated line graph $L^m(G)$ is Hamilton-connected. Let $diam(G)$ be the diameter of G and k be the length of a longest path whose internal vertices, if any, have degree 2 in G. In this paper, we show that $k - 1 \le hc(G) \le \max\{diam(G), k - 1\}$. We also present that $\kappa^3(G) \le hc(G) \le \kappa^3(G) + 2$ where $\kappa^3(G)$ is the least integer m such that $L^m(G)$ is 3-connected. All these bounds are sharp.