

# Hamiltonian Like Indices

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## Abstract

The concept of hamiltonian index was first introduced by Chartrand and Wall, who showed that if a connected graph  $G$  is not a path, then  $L^k(G)$  is defined for any positive integer  $k$ . The *hamiltonian index*  $h(G)$  of  $G$  is the smallest positive integer  $k$  such that  $L^k(G)$  is hamiltonian. Clark and Wormald extended this idea and introduced Hamiltonian like indices. For a property  $\mathcal{P}$  (Hamilton connected, edge-hamiltonian, pancyclic, vertex pancyclic, edge pancyclic) and a connected nonempty graph  $G$  which is not a path, define the  $\mathcal{P}$ -index of  $G$ , denoted  $\mathcal{P}(G)$ , as

$$\mathcal{P}(G) = \begin{cases} \min\{k : L^k(G) \text{ has property } \mathcal{P}\} & \text{if at least one such } k \text{ exists} \\ \infty & \text{otherwise} \end{cases}$$

We summarize the recent results about Hamiltonian like indices.