

Unicyclic graphs with the maximal value of Graovac-Pisanski index*

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Abstract

Let G be a graph and let Γ be its group of automorphisms. Graovac-Pisanski index of G is $GP(G) = \frac{|V(G)|}{2|\Gamma|} \sum_{u \in V(G)} \sum_{\alpha \in \Gamma} d(u, \alpha(u))$, where $d(u, v)$ is the distance from u to v in G . One can observe that $GP(G) = 0$ if G has no nontrivial automorphisms, but it is not known which graphs attain the maximum value of Graovac-Pisanski index. In this paper we show that among unicyclic graphs on n vertices the n -cycle attains the maximum value of Graovac-Pisanski index.

Keywords: Graovac-Pisanski index, modified Wiener index, unicyclic graphs.

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Enociklični grafi z maksimalno vrednostjo Graovac-Pisanski indeksa*

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Povzetek

Naj bo G graf in Γ njegova grupa avtomorfizmov. Graovac-Pisanski indeks grafa G je $GP(G) = \frac{|V(G)|}{2|\Gamma|} \sum_{u \in V(G)} \sum_{\alpha \in \Gamma} d(u, \alpha(u))$, kjer je $d(u, v)$ razdalja med vozliščema u in v grafa G . Opazimo lahko, da je $GP(G) = 0$, če G nima netrivialnih avtomorfizmov, ni pa znano, kateri grafi dosežejo maksimalno vrednost Graovac-Pisanski indeksa. V tem članku pokažemo, da so med enocikličnimi grafi na n vozliščih n -cikli tisti, ki dosežejo maksimalno vrednost Graovac-Pisanski indeksa.

Ključne besede: Graovac-Pisanski indeks, modificirani Wienerjev indeks, enociklični grafi.

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