

On the Terminal Wiener and Edge-Wiener Indices of an Infinite Family of Dendrimers

Ali Iranmanesh

Faculty of Mathematical Sciences, Tarbiat Modares University, Tehran, Iran
iranmanesh@modares.ac.ir

Mahdieh Azari

Islamic Azad University, Kazerun, Iran
azari@kau.ac.ir

Let G be a simple connected n -vertex graph with the vertex set $V(G) = \{v_1, v_2, \dots, v_n\}$ and let $P = (p_1, p_2, \dots, p_n)$ be an n -tuple of nonnegative integers. The thorn graph G_P is the graph obtained by attaching p_i pendent vertices to the vertex v_i of G , for $i = 1, 2, \dots, n$. The concept of thorn graphs was first introduced by Gutman [1] and eventually found a variety of chemical applications. The terminal Wiener index $TW(G)$ of G [2] is defined as the sum of distances between all pairs of pendent vertices of G and the edge-Wiener index $W_e(G)$ of G [2-4] is defined as the sum of distances between all pairs of its edges. Two possible distances $d_0(e, f|G)$ and $d_4(e, f|G)$ between the edges e and f of G can be considered and according to them, the first edge-Wiener index $W_{e_0}(G)$ and the second one $W_{e_4}(G)$ are introduced. In this paper, we present exact formulae for computing the terminal Wiener index, the first and the second edge-Wiener indices of an infinite family of dendrimers by considering them as the thorn graphs of simpler dendrimers.

References:

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