A STUDY ON THE REVERSE EULER SOMBOR INDEX OF VARIOUS GRAPHS

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Abstract: In this paper an attempt to define vertex degree-based topological index, reverse Euler Sombor index is made and its mathematical properties are established. Reverse Euler Sombor index
$$REU(G) = \sum_{uv \in E(G)} \sqrt{(\Delta - d_u + 1)^2 + (\Delta - d_v + 1)^2 + (\Delta - d_u + 1)(\Delta - d_v + 1)},$$
where d_u is the degree of the vertex $u \in V(G)$ and Δ is the maximum vertex degree of the graph G. REU index is computed for standard graphs like path, cycle, complete, crown, star, wheel, friendship, ladder, butterfly, complete bipartite, helm and regular. The bounds of reverse Euler Sombor index are found using famous Cauchy-Schwarz inequality and Jensen inequality. This study is extended for computing reverse Euler Sombor index for the family of thorn graphs.

Keywords and Phrases: Vertex degree-based topological indices, reverse Euler Sombor index, simple graphs, thorn graphs.

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