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Improvement a Lower Bound of Energy for Some Family of Graphs, Related to Determinant of Adjacency Matrix

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Abstract : Let G be a simple graph with the vertex set V (G) and with the adjacency matrix A (G). The energy E (G) of G is defined to be the sum of the absolute values of all eigenvalues of A (G). Also let n and m be number of edges and vertices of the graph respectively. A regular graph is a graph where each vertex has the same number of neighbours. Given a graph G, its line graph L(G) is a graph such that each vertex of L(G) represents an edge of G; and two vertices of L(G) are adjacent if and only if their corresponding edges share a common endpoint in G. In this paper we show that for every regular graphs and also for every line graphs such that (G) 3 we have, E(G) 2nm + n 1. Also at the other part of the paper we prove that 2 (G) E(G) for an arbitrary graph G.

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