1082-05-244 **Bryan Ek**, School of Mathematical Sciences, 85 Lomb Memorial Drive, Rochester Institute of Technology, Rochester, NY 14623-5604, **Caitlin VerSchneider**, Department of Mathematics, Nazareth College, Rochester, NY 14618, and **Darren A. Narayan***, School of Mathematical Sciences, 85 Lomb Memorial Drive, Rochester Institute of Technology, Rochester, NY 14623-5604.
Efficiency of Graphs.

The distance between any two vertices u and v in a graph is the number of edges in a shortest path between u and v. If there is no path connecting u and v, then the distance between u and v is said to be infinity. In 2001, Latora and Marchiori introduced the measure of efficiency between vertices in a graph. The efficiency between two vertices i and j is defined as the inverse of the corresponding distance. The global efficiency of a graph is the average of the efficiencies over all pairs of distinct vertices. We determine global efficiencies for many families of graphs including: powers of paths and cycles, complete multipartite graphs, and various Cartesian products of graphs. We also consider two other measures of efficiency and connectivity. Given a graph G, let G_i denote the subgraph induced by the neighbors of vertex v_i. Then the local efficiency of G is the average of the global efficiencies of the subgraphs G_i. Also the clustering coefficient is the average number of edges in the sugraphs C_i. We present familes of graphs where the local efficiency and clustering coefficient are the same and others where they are very different. (Received July 09, 2012)