

A B S T R A C T

On Star Polynomials of Graphs

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The star polynomial is a polynomial which enumerates certain subgraphs (called star covers) of a graph. Generating functions for the star polynomials of various families of graphs are given. Algorithms for obtaining the star polynomial of a graph are derived. These algorithms were implemented on a computer in a search for costar graphs (graphs with the same star polynomial). Observations made during the computer search are stated. Certain families of graphs are shown to have unique star polynomials. Techniques for constructing costar graphs are presented, and the connection between the coefficients of the star polynomial and the partition of a graph is investigated.