

Abstract

A tree is a connected acyclic graph. A 4-caterpillar is a tree with a single path only incident to the end-vertices of paths of length 3. A graceful labelling of an undirected graph G with n edges is a one-to-one function from the set of vertices of G to the set $\{0, 1, 2, \dots, n\}$ such that the induced edge labels are all distinct, where the edge label is the difference between two endvertex labels. In this thesis, our main purpose is to use an algorithm to yield graceful labellings of 4-caterpillars.

Key Words: Trees, graceful labelling, 4-caterpillars, 4-stars.