

Graceful Labeling of Bow Graphs and Shell-Flower Graphs

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Abstract

A graceful labeling of a graph G with 'q' edges and vertex set V is an injection $f: V(G) \rightarrow \{0,1,2,\dots,q\}$ with the property that the resulting edge labels are also distinct, where an edge incident with vertices u and v is assigned the label $|f(u) - f(v)|$. A graph which admits a graceful labeling is called a graceful graph. A Shell graph is defined as a cycle C_n with $(n-3)$ chords sharing a common end point called the apex. Shell graphs are denoted as $C(n, n-3)$. A multiple shell is defined to be a collection of edge disjoint shells that have their apex in common. Hence a double shell consists of two edge disjoint shells with a common apex. A bow graph is defined to be a double shell in which each shell has any order. In this paper we prove that the bow graph with shell orders 'm' and '2m' is graceful. Further in this paper we define a shell - flower graph as k copies of $[C(n, n-3) \cup K_2]$ and we prove that all shell - flower graphs are graceful for $n = 4$.
