

Graceful Labelings of Unicyclic Graphs

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For a connected graph G with q edges, a vertex labeling $f : V(G) \rightarrow \{0, 1, 2, \dots, q\}$ such that distinct vertices have distinct labels induces an edge labeling where an edge xy gets the label $|f(x) - f(y)|$. If the edges are labeled $1, 2, \dots, q$ then the labeling is called *graceful*. A graph that has a graceful labeling is called graceful. Rosa proved that a cycle C_n is graceful if and only if $n \equiv 0$ or $n \equiv 3 \pmod{4}$. Truszczyński conjectured that all unicyclic graphs that are not cycles are graceful. This conjecture is still open. We present a brief survey of graceful unicyclic graphs and discuss recent progress in this area.

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