Abstract

In this paper we introduce a new type of graph labeling for a graph $G(V,E)$ called an $(a,d)$-vertex-antimagic total labeling. In this labeling we assign to the vertices and edges the consecutive integers from 1 to $|V| + |E|$ and calculate the sum of labels at each vertex, i.e., the vertex label added to the labels on its incident edges. These sums form an arithmetical progression with initial term $a$ and common difference $d$.

We investigate basic properties of these labelings, show their relationships with several other previously studied graph labelings, and