

ALTERNATIVE APPROACH FOR ANTIMAGIC LABELLING OF A WHEEL GRAPH USING THE CONCEPT OF A PATH GRAPH

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In 1989, Hartsfield and Ringel introduced the idea of antimagic labelling. Antimagic labelling of a graph G with m edges and n vertices is a bijection from the set of edges to the set of integers $\{1, \dots, m\}$ such that all n vertex summations are pairwise distinct. Here the vertex summation is defined as the summation of the labels assigned to edges incident to a vertex. Hartsfield and Ringel conjectured that all simple connected graphs except K_2 are antimagic. In our research, we found an alternative antimagic labelling method for a wheel graph. A wheel graph is a simple graph that contains a cycle of length $n - 1$ and for which every vertex in the cycle is connected to one other vertex known as the hub or the middle vertex. The edges of a wheel that connect to the hub are called spokes. We labelled the Wheel graph using the concept of the antimagic labelling method of the path graph P_{n-1} . We removed the middle vertex of the wheel graph and created a path graph using the vertices in the outer cycle of the wheel graph. Then the spokes of the Wheel graph were represented by adding one edge to each vertex. We labelled all the edges using antimagic labelling of the path graph P_{n-1} . Finally, we calculated the vertex sum for each vertex and proved that every vertex sum was distinct, and the middle vertex takes the highest value, resulting in the complete proof of the theorem.

Keywords: Antimagic labelling, Path graph, Wheel graph