

On vertex-magic total labeling of some wheel related graphs *

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Abstract

Let G be a graph with vertex set $V = V(G)$ and edge set $E = E(G)$ and let $e = |E(G)|$ and $v = |V(G)|$. A one-to-one map λ from $V \cup E$ onto the integers $\{1, 2, \dots, v + e\}$ is called vertex-magic total labeling if there is a constant k so that for every vertex

$$\lambda(x) + \sum \lambda(xy) = k,$$

where the sum is over all vertices y adjacent to x . Let us call the sum of labels at vertex x the weight $\omega_\lambda(x)$ of the vertex x under labeling λ . We require $\omega_\lambda(x) = k$ for all x . The constant k is called

*This research was partially supported by the School of Mathematical Sciences, Lahore and the Higher Education Commission of Pakistan.

the magic constant for λ .

In this paper it is proved that the helm H_n has no vertex-magic total labeling for any $n \geq 3$. Also the generalized web $WB(n, t)$ has a vertex-magic total labeling for $n = 3$ or $n = 4$ and $t = 1$ but it is not vertex-magic for $n \geq 17t + 12$ and $t \geq 0$. The generalized Jahangir graph $J_{n, t+1}$ is vertex-magic for $n = 3$ and $t = 1$ but it has not this property for $n \geq 7t + 11$ and $t \geq 1$.

2000 AMS Classification Number: 05C78