On Friendly Index Sets of Barycentric Subdivision of Wheels

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Let G be a simple graph with vertex set $V(G)$ and edge set $E(G)$, and let A be an abelian group. A labeling $f : V(G) \to A$ induces an edge labeling $f^* : E(G) \to A$ defined by $f^*(xy) = f(x) + f(y)$, for each edge $xy \in E(G)$. For each $i \in A$, let $v_f(i) = |\{v \in V(G) : f(v) = i\}|$ and let $e_f(i) = |\{e \in E(G) : f^*(e) = i\}|$. Let $c(f) = \{|e_f(i) - e_f(j)|: (i, j) \in A \times A\}$. A labeling f of a graph G is said to be A-friendly if $|v_f(i) - v_f(j)| \leq 1$ for all $(i, j) \in A \times A$. If $c(f)$ is a $(0, 1)$-matrix for an A-friendly labeling f, then f is said to be A-cordial. When $A = \mathbb{Z}_2 = \{0, 1\}$, the friendly index set of the graph G, FI(G), is defined as $\{|e_f(0) - e_f(1)|$: the vertex labeling f is $\mathbb{Z}_2$-friendly$\}$. The subdivision of wheels, $S(W(n))$, graph is constructed by inserting vertices into the edges in the cycle part of a wheel graph. In this paper, we investigate and present results concerning the friendly index sets of the subdivision of wheels $S(W(n))$.

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