The Ramsey Numbers for copies some Tree versus Wheels and Complete graph

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Abstract. For given graphs $G$ and $H$, the Ramsey number $R(G, H)$ is the smallest natural number $n$ such that for every graph $F$ of order $n$: either $F$ contains $G$ or the complement of $F$ contains $H$. This paper investigates the Ramsey number $R(\cup G, H)$, where $G$ contains tree and $H$ are wheel $W_m$ and complete graph $K_m$. We show that if $n$ is even and $n \geq 3$, then $R(2S_n, W_4) = 3n$. Furthermore, if $n \geq 3$ and $m$ is odd, $m \leq 2n - 1$, then $R(kS_n, W_m) = 3n - 2 + (k - 1)n$, and for arbitrary $n$ and $m$, then $R(\bigcup_{i=1}^{k} T_{n_i}, K_m) = R(T_{n_k}, K_m) + \sum_{i=1}^{k-1} n_i$.

Keywords: Ramsey numbers, wheels, tree, complete graph

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