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Title: An associated graph to a graded ring

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This work is mainly devoted to study of the graph $\Gamma_S(R)$ associated to a graded ring R and a multiplicatively closed subset S of R . Recall that the vertices of $\Gamma_S(R)$ are all of the elements of R and two distinct vertices are adjacent if their sum belongs to S .

In fact, we investigate some basic graph-theoretical properties of $\Gamma_S(R)$, where $R = \bigoplus_i R_i$ is a graded ring. Moreover, we deal with the relationship between the graph-theoretical properties of $\Gamma_S(R)$ and $\Gamma_{S \cap R_0}(R_0)$.

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