ALGEBRAIC PROPERTIES OF THE PATH IDEAL OF A GRAPH

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ABSTRACT. Let k be a field and $R = k[x_1, ..., x_n]$. Suppose that G is a directed graph with n vertices. Associated to G is a squarefree monomial ideal, $I_t(G)$, called the path ideal of G of length t, where $2 \leq t \leq n$. We are interested in studing some algebraic properties of $I_t(G)$, in which G is a tree. We showed that $R/I_t(L_n)$ is Cohen-Macaulay if and only if $t = n$ or $n/2$, where L_n is a line.