

On the Girth of the Regular Digraph of Ideals of a Commutative Ring

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Abstract : Let R be a commutative ring. The regular digraph of ideals of R , which is denoted by $\Gamma(R)$, is a digraph whose vertex-set is the set of all non-trivial ideals of R and, for every two distinct vertices I and J , there is an arc from I to J , whenever I contains a non-zero-divisor on J . In this article, we show that an indecomposable Noetherian ring R is Artinian local if and only if $Z(I)=Z(R)$ for every non-nilpotent ideal I . Then we conclude that the girth of $\Gamma(R)$ is not equal to four.

Keywords : commutative ring, girth, regular digraph, zero-divisor

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