

## THE ARMENDARIZ GRAPH OF A RING

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### Abstract

In this paper we initiate the study of Armendariz graph of a commutative ring  $R$  and investigate the basic properties of this graph such as diameter, girth, domination number, etc. The Armendariz graph of a ring  $R$ , denoted by  $A(R)$ , is an undirected graph with nonzero zero-divisors of  $R[x]$  (i.e.,  $Z(R[x])^*$ ) as the vertex set, and two distinct vertices  $f(x) = \sum_{i=0}^n a_i x^i$  and  $g(x) = \sum_{j=0}^m b_j x^j$  are adjacent if and only if  $a_i b_j = 0$ , for all  $i, j$ . It is shown that  $A(R)$ , a subgraph of  $\Gamma(R[x])$ , the zero divisor graph of the polynomial ring  $R[x]$ , have many graph properties in common with  $\Gamma(R[x])$ .

**Keywords:** Armendariz property, diameter, girth, zero-divisor graph.

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