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Shane P Redmond* (shane.redmond@eku.edu), 521 Lancaster Ave., 313 Wallace Bldg.,
Richmond, KY 40475. *Zero-divisors, zero-divisor graphs, and cut vertices.*

Given a commutative ring with identity R , define the zero-divisor graph of R , denoted $\Gamma(R)$, to be the graph whose vertices are the non-zero zero-divisors of R and where there is an edge between vertices x and y if and only if $xy = 0$. Several features of zero-divisor graphs have been studied in the past few years, including the fact that all zero-divisor graphs (as defined here) are connected. A cut vertex of a graph is a vertex such that its removal (along with the incident edges) produces a disconnected graph. This presentation classifies when a zero-divisor graph of a finite commutative ring has a cut vertex in terms of properties of the ring. Further properties of cut vertices in zero-divisor graphs will be investigated. Finally, computations will be presented on the number of zero-divisors in a ring, including the fact that it is not possible to find a commutative ring with identity having exactly n zero-divisors for every natural number n . (Received January 25, 2010)