Zero Product Probability of Non commutative Ring and Its Applications in Zero Divisor Graph

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Abstract

In the field of algebra, studies associated to probability of groups and rings have been widely done by many researchers. With these theoretical studies, characteristics of the groups and rings involved can be known based on the conditions given. Let *R* be a finite upper triangular matrices over integer modulo three. In this study, the probability that two elements of *R* have product zero, or later called the zero product probability, is determined. Then, the results obtained are applied into graph theory, where the zero divisor graph is constructed. A zero divisor graph is defined as a simple graph where its vertices are all zero divisors of *R*, and two vertices are adjacent if and only if their product is zero. 22