Abstract

The problem of finding the number of ring homomorphisms between rings of certain properties has been studied only few times. This thesis discusses the number of ring homomorphisms over algebraic integers; starting with the rings of Gaussian integers ($\mathbb{Z}_m[i]$ modulo m),where $i^2 = 1$. Over the ring of Eisenstein integers ($\mathbb{Z}_m[\rho]$ modulo m), where $\rho^2+\rho+1 = 0$, and over rings of some algebraic integers θ, $\mathbb{Z}_m[\theta]$ for an algebraic integer θ with minimal polynomial $p(x) = x^2 + ux + v$ whose absolute radicand, ($|u^2 - 4v| = m$), is a prime integer and $\mathbb{Z}[\theta]$ is a UFD. Among the results that have been found by previous researchers, in this thesis we give some generalizations to the problem. The new "original" results, corollaries and theorems, have been marked with an asterisk (*).