

The goal of the thesis is introducing the reader to some of the algorithms for proving primality along with practical usage of some of these algorithms. The main objective of the thesis is a presentation of Goldwasser-Killian primality test, which can be used to produce primality certificates, which can be verified very quickly. For better understanding of the test the thesis also includes an introduction to elliptic curves, which are the basis of the test. The thesis also shows how is a group of points on elliptic curves constructed and how to use this information for construction of algebraic formula for a sum of two points on a curve.