Abstract

Diploma contains:  
\_\_ Pages.

\_\_ sources of information used.

Keywords and concepts: *Ideal, Polynomial, Monomial, Affine Variety, Term Orders, Division Algorithm, Gröbner Basis, Buchberger’s Algorithm.*

***The object*** of research of the Diploma is the Gröbner Bases and their application to solving algebraic equations systems and ideals.

***The purpose*** of the diploma is to consider theoretical information and algorithms that allow you to use the Gröbner bases for solving some problems, as well as practically apply them as exercises.

In the first chapter of the diploma, the concepts of affine varieties and ideals are considered (the necessary information from the theory is presented).

At the beginning of the second chapter, four main tasks related to ideals are presented. These tasks are discussed in the following paragraphs. Also, in the second chapter, the concept of monomial ordering was considered, the concepts of Gröbner bases were introduced, algorithms for dividing polynomials in one and several variables (Buchberger’s algorithm) are presented.

The third chapter discusses some theoretical information about the application of Gröbner bases.

Diploma is abstract in nature. All results of the work are reliable and are consistent with previously known results. As examples of some algorithms, the author of the work as exercises solved practical problems.