

T. Yarmolenko

Research supervisor: I.A.

Sverchevska, Candidate of

Pedagogical Sciences, Associate Professor

Zhytomyr Ivan Franko State University

Language tutor: L.P. Serdiichuk

METHODS OF SOLVING THE SYSTEMS OF EQUATIONS

The research is devoted to the basic methods of solving of equations systems. This is an important question in mathematics, since the systems of equations are used to solve a large number of tasks. Simple math problems studied in the course of higher mathematics give the possibility of obtaining analytical solutions. Complex mathematical models require the use of numerical methods.

Numerical methods are mathematical tools by which a mathematical problem is formulated in a form suitable for solution on a computer. In this case we speak of converting a mathematical problem in the computational task. It should be noted that with the invention of fast and powerful digital computers, the role of numerical methods for solving scientific and engineering problems has increased significantly. Although analytical methods of solving mathematical problems are very important, numerical methods essentially expand possibilities for solving scientific and engineering problems. Calculating is a routine and the computers save scientists or engineer's time: formulation of objectives and generation of hypotheses, analysis and interpretation of the calculation results and the like.

Numerical methods provide a systematic formal approach to solving mathematical problems. However, their effective use depends on the user's abilities, because there are several possible numerical methods to solve each mathematical problem and the software implementations are different for different types of computers.

Numerical methods are powerful tools for problem solving. Having mastered these methods, a future specialist acquires the ability to systematic analysis using mathematical modeling of most complex tasks of modern science and technology.

The study of numerical methods stimulates the gaining of practical computer skills, because the best way to learn programming is writing computer programs himself. The study of numerical methods encourages the deeper understanding of mathematics itself, since one of the objectives of numerical methods is simplifying the methods of higher mathematics to basic arithmetic operations.

The system of linear algebraic equations plays an important role in mathematics, since it helps to solve a large number of problems of linear algebra, theory of differential equations, mathematical physics, etc, and those of physics and engineering, where the above mentioned mathematical theories are applied. The methods of solving the systems of linear equations can be divided into two groups: exact and iterative.

The methods that enable to find the exact solution of the system by performing a number of arithmetic operations under the assumption that all computations are performed exactly (without rounding), and the coefficients and free members are the exact number's, are called accurate.

The methods that allow to find an approximate solution of the system with a pre-specified accuracy by performing the number of arithmetic operations, are called iterative.

So the, methods of solving the systems of equations are very diverse and important.

LITERATURE

1. Тарасов В.Н. Численные методы. Теория, алгоритмы, программы / Тарасов В.Н., Бахарева Н.Ф. – Оренбург: ИПК ОГУ, – 2003. – 195с.
2. Турчак Л.И. Основы численных методов / Турчак Л.И. – Наука, – 1987. – 209с.
3. Фельдман Л.П. Чисельні методи в інформатиці / Фельдман Л.П., Петренко А.І., Дмитрієва О.А. – К.: «Питер», – 2006, – 196с.