ABSTRACT

for course work, student Terekh Taras, group XA-51
on discipline "Numerical methods"
on the topic of "*The solution of the boundary-value problem for ordinary differential equations by the method of finite differences*"

In the course work, the finite difference method for the solution of the boundary value problem for ordinary differential equations of the second order is investigated. The formulation of the problem, the algorithm for solving the problem, the description of the software product for solving this problem and the solution of the test cases are given.

To do this, a project was developed in Visual Studio 2015 (C ++, Win32 Console Application), which consists of six modules. The program allows to solve the boundary value problem both with given values of functions and constant values (special case).

In the second section, the problems of approximation of functions are considered: finding the coefficients of the empirical dependence, finding the general form and the coefficients of the approximating dependence, and spline interpolation. The above theoretical information, unleashed the given problems with the construction, approximating functions and estimating their errors, and conclusions are drawn. To solve the problems, MS Excel 2016 environment was used.