

## **ABSTRACT**

for course work, student Lopanosov Ilya, group XA-51  
on discipline "Numerical methods"  
on the topic of «*The solution of nonlinear programming unconstrained problem  
by the steepest descent method*»

In the course work was considered the method of steepest gradient descent for solving nonlinear programming problems, namely finding the optimum of a given objective function. Also, the statement of the problem, the algorithm for solving the problem, the description of the software product for solving this problem and the solution of test cases are given.

Steepest descent is a first-order iterative optimization algorithm. To find a local minimum of a function using gradient descent, one takes steps proportional to the negative of the gradient of the function at the current point.

In the second part of the work we consider examples for solving three typical problems of approximation of functions for experimental data: finding the coefficients of empirical dependence; Finding the general form and coefficients of approximating dependence; spline interpolation.