Dear students!

For the exam, during the semester you need to program two methods of one-dimensional minimization and four methods of two-dimensional minimization and debug them on test functions.

You must also prepare your presentation using one of the optimization methods. I will send you the presentation topics and literature shortly.

I. Minimize the function

$$f(x) = \frac{a}{e^x} + bx, \quad a, b \in \mathbb{R}^n.$$

by using

1) the dichotomy method;

2) the golden section search method.

II. Minimize the functions

$$1) f(x, y) = (1 - x)^2 + 100(y - x^2)^2,$$

$$2) f(x, y) = (x^2 + y - 11)^2 + (x + y^2 - 7)^2$$

by using

1) the Nelder-Mead method;

2) the gradient methods;

3) the conjugate gradient methods;

4) the quasi-Newton methods.

With best wishes, L. Polyakova