Solving The Problem of Unconstrained Optimization Using Mathematical Programs

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Abstract:

This article shows a method for solving optimization problems, which is widely used in economics. It is convenient to solve problems using the MathCAD software package. Today, it is necessary for a specialist to have sufficient competence in the field of innovative technologies. The article shows how to solve practical problems using MathCAD software.

Keywords: Optimization, modeling, income, MathCAD, mathematical model, algorithm.

Introduction

The quality of education depends on the ability to apply innovative information technology in the teaching process to solving practical problems. The main stages of solving optimization problems are building a mathematical model of the problem, creating a solution algorithm, being able to use information technologies to obtain a solution, forming the competence of decision-making based on the solution. The student should be encouraged to work independently on modeling the simplest problem [1-4].

Task

The enterprise produces three different types of fabric of the same type on three different types of machines. If we earn from the sale of these fabric products, I-type - x thousand meters, II-type - y thousand meters, III- type - z thousand meters. Type I earns from fabric

I- type $3x^2 - x + xy$ - sh.t. amounts to soum.

II- type $y^2 - y$ - sh.t. amounts to soum.

III- type $2z^2 + xz - z$ - sh.t. amounts to soum.

How many meters of each type of gas should the enterprise produce in order to earn maximum profit?

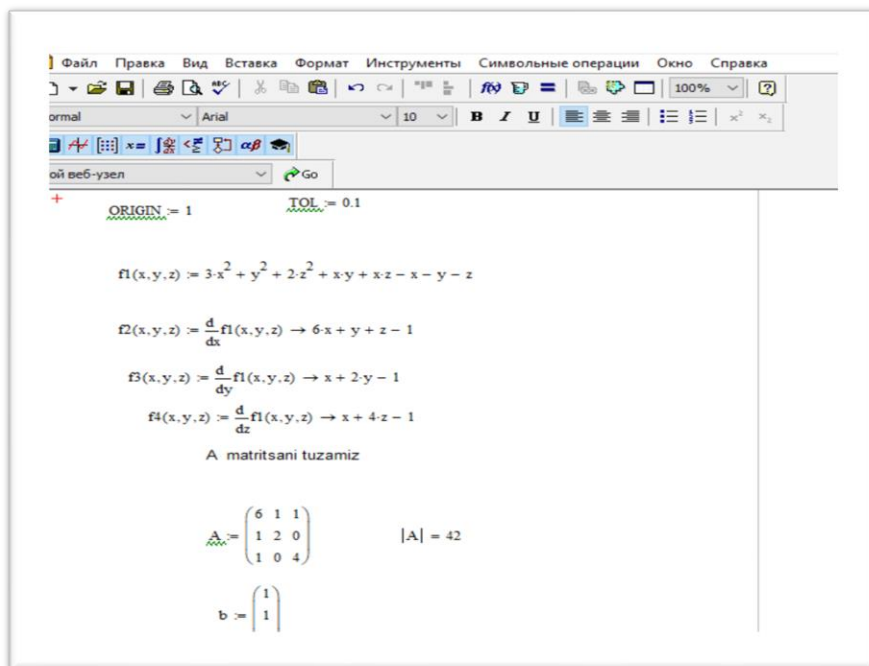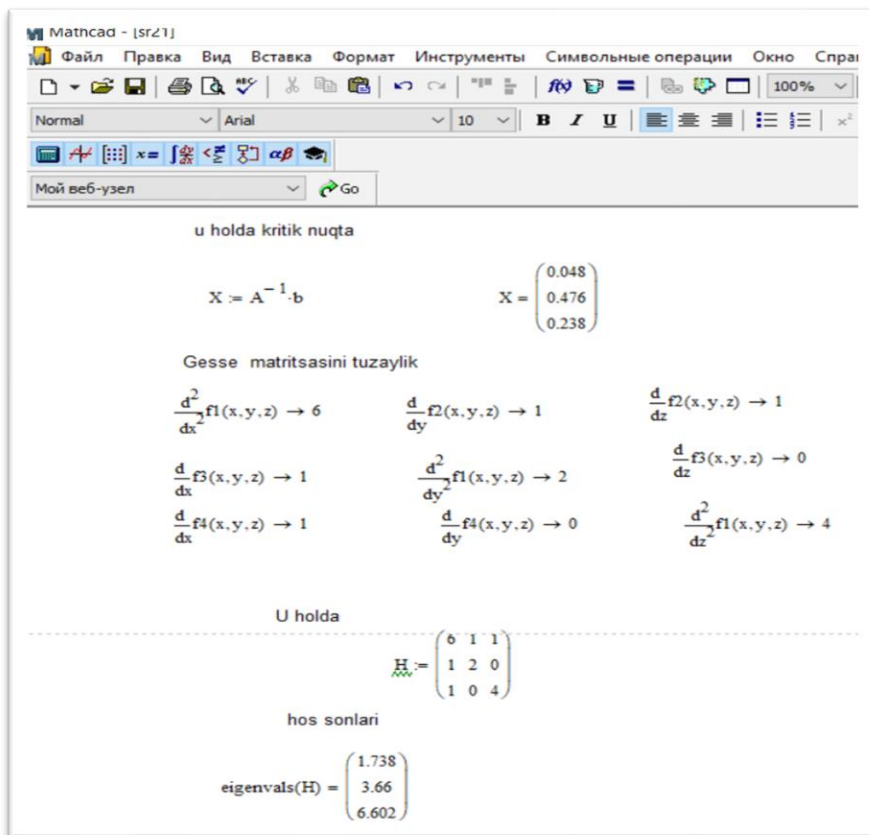We work on the problem in the MathCAD software system
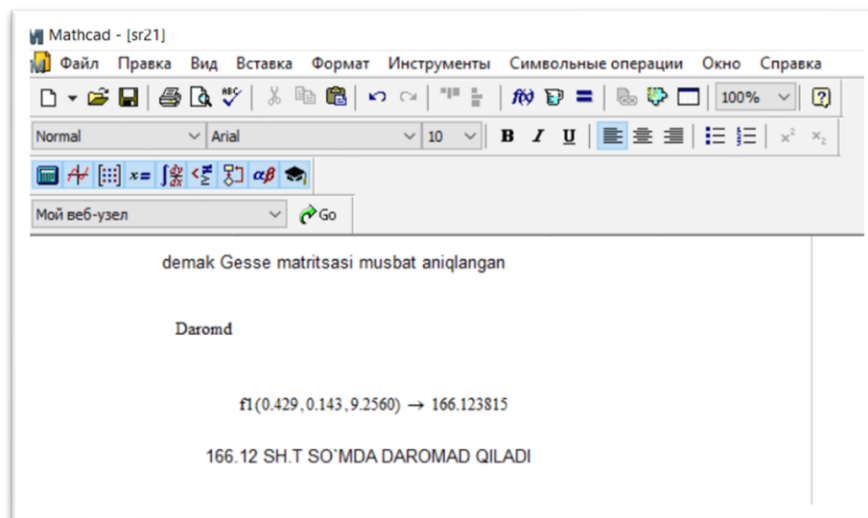
Figure 1.

Figure 2.

Figure 3.

As a result of the above calculations, it can be determined that the enterprise has 166.12 sh.t. earns in soums.

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