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PROBLEMS AND SOLUTIONS OF THEORETICAL CONNECTION OF ANANAVIAN AND NONANAVIAN METHODS OF SOLVING QUADRATIC EQUATIONS

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Abstract:	Keywords:
This scientific article provides information about the essence of the existing methods of solving quadratic equations and the new optimal methods of solving them, as well as their content and advantages. Instructions on the methods of optimal solution of quadratic equations in practice are given.	Quadratic equation, coefficients of the equation, solution, optimal solution method, eating conditions.

Introduction

1.1. About the essence of the quadratic equation and the requirements and basic conditions for its practical application.

In our time, it is very difficult to find a person who has not encountered the quadratic equation. For this reason, we think that there is no need to introduce it in depth. However, despite this, it is not necessary to dwell on the general appearance of the quadratic equation, the naming of its coefficients, its separation into types and the general and special types of its solution. We found him a slave.

ax2 + bx + c = 0, (1)

It is called a quadratic equation of the second order with one variable. Its coefficients are named as follows:

a – bosh (birinchi) koeffitsent;
b – o'rta (ikkinchi) koeffitsent;

c – ozod son;

Here, we considered it necessary to emphasize once again that these coefficients are important in solving quadratic equations.

The properties that are relevant to a number of solutions of the quadratic equation are directly related to these coefficients. The most important thing is that they participate in all the formulas used to achieve the solution.

Another important point is that the values of these coefficients are always taken into account when dividing quadratic equations into types.

It was widely used and is still used in calculations of truncated cones, spherical rings and spherical arches, and in finding the surface of spheres and spheres.

In algebra, systems of equations of the second order with two unknowns were actively used and are still used to find answers to practical problems solved by them.

Here we will give a solution to a problem. Problem: The base of a rectangle is equal to 25% of its height. If its surface is equal to 36. m2, find its perimeter.

I. Given: III. Solution plan:

In the solution of this problem, the methods of introducing one of the simplest forms of the quadratic equation into problem solving were shown as an example.

Here we will give a solution to a problem. Problem: The height of the base of a rectangle equal to 25%. If its surface is equal to 36. m2, find its perimeter

I. Given: III. Solution plan:

$a = y$ a) $x = 4y$

$b = x$ б) $x \cdot y = 36$

b = x

I. Topish kerak: в) $4y \cdot y = 36$

$P_{\square} - ?$ $y^2 = 9$

IV. Solving:

a = y

1) $y_{1,2} = \pm 3$, $x_{1,2} = \pm 12$

2) $P_{\square} = 2 \cdot (12 + 3) = 30$, metr.

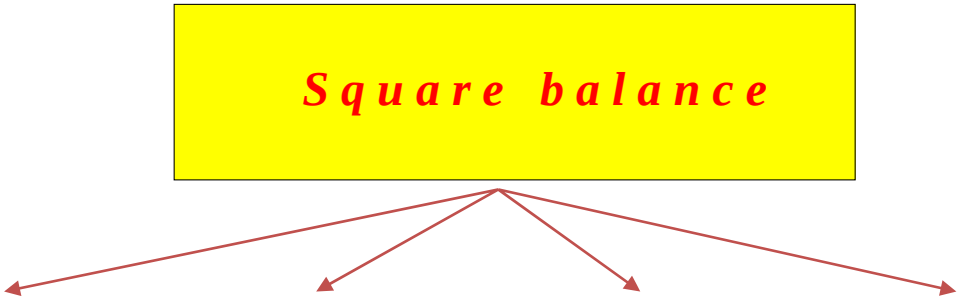
In the solution of this problem, the methods of introducing one of the simplest forms of the quadratic equation into problem solving were shown as an example.

1.2. About types of quadratic equations, general (traditional) ways of solving them

Quadratic equations are classified like other equations. Below is a scheme that expresses the types of quadratic equations. Then we will touch on each of them separately according to this scheme, giving detailed information about the definition, properties and general and specific solutions of each type and their requirements.

Each type of quadratic equation has its own solutions. These solutions are private solutions. Below we present a scheme that allows you to get acquainted with the types of quadratic equations and get acquainted with their types.

A scheme representing the types of quadratic equations



Complete quadratic equations	The given quadratic equations8	**Quadratic equations**	**Bikvadrat tenglamalar**
1.1.—**a + b + c = 0** bo'lgan kvadrat tenglamalar; 1.2. "**b** koeffitsenti juft son bo'l-gankvadrat teng- lamalar; 1.3. **(a + b = c)** boshva o'rta koeffi- tsentlari yig'in- disi ozod conga teng bo'lgan kvad-rat tenglamalar; 1.4. **a = c** koefi -tsentlari o'zaro teng bo'lgan teng-lamala; 1.5. **b = c** koefi -tsentla o'zaro teng bo'lgan teng-lamalar;	2.1.—**a + b + c = 0** ‖bo'lgan kvadrat tenglamalar; 2.2. "**b** koeffitsen-ti juft son bo'l-gankvadrat teng- lamalar; 2.3. **(a + b = c)** boshva o'rta koeffi- tsentlari yig'in- disi ozod conga teng bo'lgan kvad-rat tenglamalar; 2.4. to'la kvadrat tenglamadan kel- tirilgan kvadrattenglamaga aylan-tirib yechiladigantenglamalar;	3.1. **b = 0** bo'lganchala kvadrat tenglamlar; 3.2. **c = 0** bo'lgan chala kvadrat tenglamlar; 3.1. **a = b** bo'lgan chala kvadrattenglamlar; 3.2. **a = c** bo'lgan chala kvadrat tenglamlar;	4.1. Belgilash yo'li bilan shakl almashtirish kiritib yechiladigan; 4.2. Belgilashsiz shakl almashti - rib y e chiladigan; 4.3.—**a + b + c = 0**‖bo'lgan bikvadrattenglamalar;

According to the above scheme, quadratic equations are divided into four main types. It became apparent that each quadratic equation belonging to these types is divided into classes in its place. Each of them can be easily solved with general solutions. At this point, there are special ways of solving each of them. However, it is permissible to admit that there are also special solutions for each of them.

In general, we present the solution scheme in the form of a table(Table 1)

IIIartlari	**D >0**	**D =0**	**D < 0**
Haqiqiy ildizlarisoni	**Ikkita ildizimavjud**	**Bitta haqiqiy ildizi mavjud (ko'plab izohlarda o'zaro teng ildizlar èki takrorlanuvchi ildizlar ham deb yuritiladi)**	**Bunday holat uchun tenglamaning haqiqiy sonlar to'plamidan ildizlari yo'q deb hulosa qilinadi**
Hisoblash formulasi	$= \frac{-b \sqrt{b^2-4a}}{2a}$ **(1)**	$x_1 = x_2 = -\frac{b}{2a}$	**Hisob formulasi kompleks sonlar orqali topiladi**

– Method of factoring into linear multipliers:

A simpler, more compact and computationally easier way of solving quadratic equations is the method of dividing them into linear multipliers. In this method, solving is carried out in three stages. First, the middle coefficient - b is divided into its constituents. These constituents must be proportionally connected to the main coefficient - a and the free number - s. To make it easier to compare the solution steps, we will also solve the example solved by the discriminant method using the method of dividing it into linear multipliers:

1. Solve the equation 7x2 - 15x - 18 = 0.

At the 1st stage, the middle coefficient - b is divided into the constituents.

Stage I: $07x^2 - 15x - 18 = 0$

$7x^2 - 21x + 6x - 18 = 0$

$7x(x - 3) + 6(x - 3) = 0$

$(x - 3)(7x + 6) = 0$

Stage IV: where $(x - 3) = 0$ or $(7x + 6) = 0$
may be.

Phase V: $x_1 = 3$, $x_2 = -6/7$

About the directions and procedures for solving quadratic equations through the displacement method.

Often bringing full quadratic equations to the appearance of the quad - rat equations presented, then F. Is solved by the Viet method. Such an approach to the solution of quadratic equations is carried out in a ambivalent way.

Approach 1. In this case, each term of the quadratic equation is divided into a prime factor. For example, by the following-cha order:

$$ax^2 + bx + c = 0$$

$$x^2 + \frac{b}{a}x + \frac{c}{a} = 0, \quad (B)$$

The resulting new (V) equation is freely F. Using Viet's theorem, we have the option of either.

Approach 2. In this case, the form of the quadratic equation is replaced by the form of the absolute other quadratic equation. How is it done?

To do this, the prime factor is multiplied by a free number, and the expected - Absolute New – Look quadratic equation is generated. The resulting new quadratic equation is also the quoted quadratic equation, F. Is solved by the Viet method. Finding a solution with this method will consist of two barrels.

In Step 1, a given equation with a representation of a x 2 + b x + c = 0 is converted into a new quadratic equation with a representation of x 2 + b x + a·c = 0 and is followed by a solution.

In Step 2, the resulting new equation is solved to determine the roots x1 and x2. The roots of the full quadratic equation originally given by the roots of the newly derived quoted quadratic equation are found below by the-gi formulas:

$$x_{old.1} = \frac{x_1}{a}, \quad x_{old.2} = \frac{x_2}{a}$$

Where: x1 and x2 are the roots of the newly generated quadratic equation;
X front.1 and X front.2s are the roots of the full quadratic equation originally given by;
Thus, complete quadratic equations are solved by taking the form of the quadratic equations presented. Therefore, this method ―transfer method from-is called‖.

To master this method, we will take one of the examples of this very method.

$$3x^2 + 15x - 108 = 0$$

$$x^2 + 15x - 324 = 0, \quad (V)$$

The resulting new (V) quadratic equation is given by F.We undo Viet usu lida.

The resulting new (V) quadratic equation is given by F.We undo Viet usu lida.

$$\begin{cases} x_1 + x_2 = -15 \\ x_1 \cdot x_2 = -324 \end{cases}$$

$$\begin{cases} x_1 = -27 \\ x_2 = 12 \end{cases}$$

Through the found rootstock of the new equation, we can now find the roots of the full quadratic equation originally given by:These above are

$$x_{old.1} = \frac{x_1}{a}, \quad x_{old.2} = \frac{x_2}{a}$$

with the help of formulas, we will be able to determine the roots of the full quadratic equation, which was originally given.

$$x_{old.1} = -\frac{27}{3} = -9,$$
$$x_{old.2} = \frac{12}{3} = 4.$$

This study is devoted to the description, analysis of the procedures of application, the instructions for arriving at the solution and their advantages, relying on the properties of the coefficients calculated by the advantages of the traditional methods of solving quadratic equations used today in amalièt, as well as the optimal solution methods, and the analysis of the results achieved from the use in

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