

Irrational Equations and Specific Features of Determining their Solution

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Abstract: This in the article irrational equations and them solve methods about wide comprehensive concepts given Irrational equations roots, logarithms or another irrational functions own into received are equations. In the article irrational of Eqs types, them of solving main methods and different examples with in detail analysis done This article mathematician knowledge deepening and irrational equations with to work facilitate for useful that we count.

Keywords: irrational equations, roots, logarithms, algebraic methods, square make, the roots lose the roots collection, math analysis, solution to find methods, square equations.

Some algebraic equations in solving his identification to the field never how restrictions is not placed. Fractional-rational equations in solving of Eq identification field variable attended denominators to zero equal to not to be need said demand with is determined. Irrational equations in solving while of Eq identification field to Eq incoming couple indicative roots arithmetic to be need, that is root under expressions and of the roots values negative not to be need said out of necessity come came out without is determined. Irrational equations that is unknown root sign under has been to Eqs it is said¹.

Irrational inequalities to solve, his identification field from finding start a must that not understanding because it is necessary some cases this done increase very a difficult will pass **Irrational to Eqs** in the composition root sign under variable was equations that definition is given²

Irrational of Eq identification field not found cases of the variable all found values given to Eq put checking to be seen it is necessary If identification field found if, then this to the field belongs to has been values only will be checked. Irrational equations in solving basically irrational expressions on exactly form of substitutions and irrational of expressions properties is used.

Irrational of Eqs types briefly stopping let's go :

1. Simple irrational equations

In these equations only one radical expression is available will be For example :

¹<https://reja.tdpu.uz/shaxsiyreja/content/450/html/45285/irrational%20tenglama%20maruza.htm>

²https://uz.wikipedia.org/wiki/Irrational_equation

$$\sqrt{x+7} = x+3$$

2. Many radical equations

In these equations one how many radical expressions is available will be For example :

$$\sqrt{x + \sqrt{x-1}} = 2$$

3. Partially radical equations

In these equations radical expressions another algebraic expressions with together will be For example :

$$\sqrt{2x+5} - \sqrt{x-1} = 4$$

Irrational equations to solve circle the following examples let's see :

Equations in which an expression with unknown participation is under the sign of the root are called irrational equations³:

$$2\sqrt{x} - 7 = 1; \sqrt{2x+5} + \sqrt{x-1} = 8$$

Irrational equations can have the following forms in special cases.

a) *An irrational equation involving one square root*

Example:

$$5\sqrt{x} - 8 = 2$$

solve the equation.

The translation area of Eq

$$x = \{x / x \geq 0\}; 5\sqrt{x} = 10. \sqrt{x} = 2 \Rightarrow x = 4$$

b) *An equation involving two square roots.*

Example :

$$\sqrt{3x+7} - \sqrt{x+1} = 2$$

the equation take off

$$\{3x+7 \geq 0 \Rightarrow \left\{ \begin{array}{l} x \geq -\frac{7}{3} \Rightarrow x \geq -1 \\ x \geq -1 \end{array} \right. ;$$

$$x+1 \geq 0$$

$$X = \{x / x \geq -1\}$$

³<https://packpdf.com/doc/math/864-irrational-equation-and-solving-inequalities>

$$\sqrt{3x+7} - \sqrt{x+1} = 2x+2 \Rightarrow (3x+7)(x+1) = 4x^3 + 8x + 4; x^2 - 2x - 3 = 0; x_1 = 3, x_2 = -1$$

c) *It's kind of equations artificial methods with too solve possible*

Example :

$$\sqrt{\frac{3x+2}{x}} + \sqrt{\frac{x}{3x+2}} = \frac{5}{2}$$

the equation take off

The equation identification field, that is D(T). we find :

$$\frac{3x+2}{x} \geq 0, x \neq 0, 3x+2 \neq 0$$

$$X = \left\{ x / x < -\frac{2}{3} \cup x > 0 \right\} \text{ or } \left(-\infty; -\frac{2}{3} \right) \cup (0; \infty)$$

$$\sqrt{\frac{3x+2}{x}} = y \text{ replacement if done, then } \sqrt{\frac{x}{3x+2}} = \frac{1}{y} \text{ is, } y + \frac{1}{y} = \frac{5}{2} \text{ Eq harvest will,}$$

this if $y_1 = 2; y_2 = \frac{1}{2}$ solved the fact that come comes out

Summary by doing so to speak, irrational equations unconventional solutions to the field interesting the trip provides. Initially they are scary appearance possible although, them solution of doing features and special technique to understand mathematician of research new the ways opens. Irrational equations learning mathematician relationships about our understanding deepens and problems solution to do technique tools expands. Researchers and teachers mathematician in education irrational of Eqs importance to emphasize continue to continue it is necessary while to the students each bilaterally mathematician the basis to develop possibility gives⁴

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