WAYS TO SOLVE QUADRATIC EQUATIONS

-first part: types of equations

- second part: methods for solving quadratic equations

-third part: the meaning of this type of equation.

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1 way(Factoring the left side)

■ **solve the equation:**
   $8x^2 + 10x + 3 = 0$

$8x^2 + 10x + 3 = 8x^2 + 4x + 6x + 3 = 4x(2x + 1) + 3(2x + 1) =$
   $= (2x + 1)(4x + 3)$

$(2x + 1)(4x + 3) = 0$

$2x + 1 = 0$ или $4x + 3 = 0$

$2x = -1$ $4x = -3$

$x = -1/2$ $x = -3/4$

$x = -0,5$ $x = -0,75$

Answer: -0,5; -0,75.

2 way(Derivation of a formula for solving a quadratic equation)

- **solve the equation:**

    $ax^2 + bx + c = 0$

    $ax^2 + bx = -c$

    $(2ax)^2 + 4abx = -4ac$

    $(2ax)^2 + 4abx + b^2 = b^2 - 4ac$

    $(2ax + b)^2 = b^2 - 4ac$

    $2ax + b = \pm \sqrt{(b^2 - 4ac)}$

    $2ax = -b \pm \sqrt{(b^2 - 4ac)}$

    $x = (-b \pm \sqrt{(b^2 - 4ac)}) / 2a$

3 way(Full square extraction method)

- **solve the equation:**
  $x^2 - 10x - 11 = 0$

  Select a complete square on the left:

  $x^2 - 10x - 11 = x^2 - 10x + 5^2 - 5^2 - 11 = (x^2 - 10x + 5^2) - 36 = (x-5)^2 - 6^2$

  $(x-5)^2 - 6^2 = 0$

  $(x-5-6)(x-5+6) = 0$

  $(x-11)(x+1) = 0$

  $x - 11 = 0$ или $x + 1 = 0$

  $x_1 = 11$ $\qquad$ $x_2 = -1$

  Answer : *11; -1.*

The meaning of this type of equation.

- The considered solutions will help you find different ways to solve quadratic equations and highlight rational ones among them. which can help save time when solving tests and assignments in mathematics on the exam.

Ways to solve quadratic equations

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