

Quadratic equations - answers

Task 1. Solve the given equations by factoring the left-hand side of the equation if possible.

$$(a) \quad 49x^2 - 25x = 0 \quad 49x\left(x - \frac{25}{49}\right) = 0 \quad x_1 = 0 \quad x_2 = \frac{25}{49}$$

$$(b) \quad 49x^2 - 25 = 0 \quad 49\left(x - \frac{5}{7}\right)\left(x + \frac{5}{7}\right) = 0 \quad x_1 = \frac{5}{7} \quad x_2 = -\frac{5}{7}$$

$$(c) \quad 49x^2 + 25 = 0 \quad x \in \emptyset$$

Task 2. Solve the given quadratic equations by completing the square method.

$$(a) \quad x^2 - 20x + 100 = 0 \quad (x - 10)^2 = 0 \quad x = 10$$

$$(b) \quad x^2 + 14x + 24 = 0 \quad (x + 7)^2 = 25 \quad x_1 = -2 \quad x_2 = -12$$

$$(c) \quad x^2 + 30x + 226 = 0 \quad (x + 15)^2 = -1 \quad x \in \emptyset$$

Task 3. Solve the given quadratic equations using the **discriminant** Δ .

$$(a) \quad 3x^2 - 7x - 1 = 0 \quad \Delta = 61 \quad x_1 = \frac{7 + \sqrt{61}}{6} \quad x_2 = \frac{7 - \sqrt{61}}{6}$$

$$(b) \quad -5x^2 + 5x - 2 = 0 \quad \Delta = -15 \quad x \in \emptyset$$

$$(c) \quad 16x^2 - 8x + 1 = 0 \quad \Delta = 0 \quad x_1 = \frac{1}{4}$$