2. PISANA PROVJERA ZNANJA

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1.1 Riješi jednadžbe!

$4x^2 - 1 = 0$

$4x^2 = 1 \ / :4$

$x^2 = \frac{1}{4} \ / \sqrt{}$

$x = \pm \frac{1}{2}$ (+1)

1.2

$3x^2 + x = 0$

$x(3x+1) = 0$

$x_1 = 0 \quad x_2 = -\frac{1}{3}$ (+1)

1.3

$(1-3x)^2 = x^2 + 6x + 9$

$1 - 6x + 9x^2 = x^2 + 6x + 9$

$8x^2 - 12x - 8 = 0$

$x_{1,2} = \frac{12 \pm \sqrt{144 + 256}}{16} = \frac{12 \pm 20}{16}$ (6, 10, 8)

$x_1 = \frac{16}{8} = 2 \qquad x_2 = -\frac{4}{8} = -\frac{1}{2}$ (+1)

2. Riješi!

$\frac{\sqrt{3} - \sqrt{2}}{(x+1)^2} = \sqrt{3} + \sqrt{2} \ / \cdot (x+1)^2 \neq 0 \qquad x \neq -1$

$\sqrt{3} - \sqrt{2} = (\sqrt{3} + \sqrt{2})(x+1)^2 \ / : (\sqrt{3} + \sqrt{2})$

$(x+1)^2 = \frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}} \cdot \frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} - \sqrt{2}}$

$(x+1)^2 = \frac{(\sqrt{3} - \sqrt{2})^2}{1}$

$(x+1)^2 = (\sqrt{3} - \sqrt{2})^2 \ / \sqrt{}$

$x + 1 = \pm(\sqrt{3} - \sqrt{2})$

$x = \pm(\sqrt{3} - \sqrt{2}) - 1$ (+4)

$x_1 = \sqrt{3} - \sqrt{2} - 1 \qquad x_2 = -\sqrt{3} + \sqrt{2} - 1$

3. Riješi jednadžbu!

$\frac{x+56}{9x^2 - 16} + \frac{1}{8 - 6x} = \frac{18}{3x^2 + 4x}$

$\frac{x+56}{(3x-4)(3x+4)} - \frac{1}{-2(3x-4)} - \frac{18}{x(3x+4)} = 0 \ / \cdot -2x(3x-4)(3x+4) \neq 0 \qquad x \neq 0 \quad x \neq \frac{4}{3} \quad x \neq -\frac{4}{3}$

$\frac{-2x(x+56) + 3x^2 + 4x + 36(3x-4)}{-2x(3x-4)(3x+4)} = 0$

$\frac{-2x^2 - 112x + 3x^2 + 4x + 108x - 144}{-2x(9x^2 - 16)} = 0$

$x^2 - 144 = 0$

$x^2 = 144 \ / \sqrt{}$

$x = \pm 12$ (+4)

6. Ishann i Makka Pakka, dvije sestre svaki dan pješače do Hafar al Batina udaljenog 400m. Ishann, starija sestra, načini 300 koraka manje od mlađe sestre, Makka Pakka ima korak 30cm kraći od Ishann. Kolika je dužina koraka Ishann, a kolika Makka Pakka?

$s = 400m = 40\,000$
$k_m = k_i + 300$
$J_m = J_i - 30$
$k_i = k_m - 300$
$d_i = d_m + 30$

k_m = broj koraka Makka Pakke
k_i = broj koraka Ishann
J_m = dužina koraka Makka Pakke
J_i = dužina koraka Ishann

$$J_{m_{1,2}} = \frac{-30 \pm \sqrt{900 + 16\,000}}{2}$$

$$= \frac{-30 \pm \sqrt{16900}}{2}$$

$$= \frac{-30 \pm 130}{2}$$

$$J_{m_1} = \frac{100}{5} = 50 \quad \checkmark$$

$$J_{m_2} = \frac{-160}{2} = -80 \quad \times$$

$J_i = J_m + 30$

$J_i = 50 + 30$

$J_i = 80$

$s = k_m \cdot J_m \qquad s = k_i \cdot J_i$

$k_m \cdot J_m = 40\,000$

$k_i \cdot J_i = 40\,000$

$k_m \cdot J_m = k_i \cdot J_i$

$k_m \cdot J_m = 40\,000 \rightarrow k_m = \frac{40\,000}{J_m}$

$(k_m - 300)(J_m + 30) = 40\,000$

$$\left(\frac{40\,000}{J_m} - 300\right)(J_m + 30) = 40\,000$$

$$\frac{40\,000 - 300J_m}{J_m} \cdot (J_m + 30) = 40\,000$$

$$\frac{(40\,000 - 300J_m)(J_m + 30)}{J_m} = 40\,000$$

$$\frac{40\,000J_m + 1\,200\,000 - 300J_m^2 - 9\,000J_m}{J_m} = 40\,000 / \cdot J_m \neq 0$$

$31\,000J_m + 1\,200\,000 - 300J_m^2 = 40\,000J_m$

$-300J_m^2 - 9\,000J_m + 1\,200\,000 = 0 \;/ : (-300)$

$J_m^2 + 30J_m - 4000 = 0$

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