

1. a) $-3x^2 + 5x + 11 = 0 / \cdot (-1)$

$3x^2 - 5x - 11 = 0$

$x_{1,2} = \frac{5 \pm \sqrt{25 + 4 \cdot 3 \cdot 11}}{6}$

$= \frac{5 \pm \sqrt{157}}{6}$ (+1)

$x_1 = \frac{5 + \sqrt{157}}{6}$
 $x_2 = \frac{5 - \sqrt{157}}{6}$

b) $4x^2 - 1 = 0$

$4x^2 = 1 / :4$

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

$x = \pm \frac{1}{2}$

(+1)

c) $76x^2 - 22x = 0$

$4x(4x - 3) = 0$

$x_1 = 0$
 $x_2 = \frac{3}{4}$

(+1)

2. a) $\sqrt{2x+1} + \sqrt{2x-1} = 1$

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

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

$1 = -2\sqrt{2x-1} / ^2$

$1 = 4(2x-1)$

$1 = 8x - 4$

$-8x = -5 / :(-8)$

$8x = 5 / :8$

$x = \frac{5}{8} X$ (+1)

b) $\frac{x}{x-1} + \frac{x}{x+1} = \frac{9}{4} / \cdot 4(x-1)(x+1) \neq 0$ (+1)

$x \neq 1$
 $x \neq -1$

$4x(x+1) + 4x(x-1) = 9(x-1)(x+1)$

$4x^2 + 4x + 4x^2 - 4x = 9x^2 - 9$

$8x^2 = 9x^2 - 9$

$-x^2 = -9 / \cdot (-1)$

$x^2 = 9 / \sqrt{\quad}$

$x = \pm 3$ (+1)

PROVA:

$\sqrt{\frac{5}{4} + \frac{1}{4}} + \sqrt{\frac{5}{4} - \frac{1}{4}} = 1$

$\sqrt{\frac{6}{4}} + \sqrt{\frac{4}{4}} = 1$

$\frac{3}{2} + \frac{1}{2} = 1$

$2 = 1 X$ (+1)

3. Rjesi sustav

$$x+y=5 \rightarrow x=5-y$$

$$x^2+y^2=13$$

$$(5-y)^2 + y^2 = 13 \quad (+1)$$

$$25 - 10y + y^2 + y^2 = 13$$

$$2y^2 - 10y + 12 = 0 \quad |:2$$

$$y^2 - 5y + 6 = 0$$

$$\begin{array}{l} \swarrow \quad \searrow \\ -2 \quad -3 \end{array}$$

$$\begin{array}{l} (+1) \quad y_1 = 2 \\ \quad \quad y_2 = 3 \end{array}$$

$$x_1 = 5 - 2$$

$$x_1 = 3$$

$$x_2 = 5 - 3$$

$$x_2 = 2$$

(+1)

4. a) $2x^2 + 7x - 15 = 0$

$$\begin{array}{l} x_1 + x_2 = -\frac{7}{2} \\ x_1 \cdot x_2 = \frac{-15}{2} \end{array}$$

(+1)

b) $x^2 + 7x + 10 = 0$

$$\begin{array}{l} \swarrow \quad \searrow \\ 2 \quad 5 \\ x_1 = -2 \\ x_2 = -5 \end{array}$$

(+1)

$$5. 3x^4 + 10x^2 + 8 = 0$$

$$t = x^2$$

$$3t^2 + 10t + 8 = 0 \quad (+1)$$

$$t_{1,2} = \dots$$

$$t_1 = -2$$

$$t_2 = -\frac{4}{3} \quad (+1)$$

$$x^2 = -2$$

$$x^2 = -\frac{4}{3}$$

$$x_{1,2} = \pm\sqrt{2}i$$

$$x_{3,4} = \pm\frac{2}{\sqrt{3}}i$$

$$x_{3,4} = \pm\frac{2\sqrt{3}}{3}i \quad (+1)$$

6. Zračna udaljenost: Džakova i Berlinac iznosi 880 km. Od Džakova do Berlinca zrakoplov je letio brzinom kojom je za 20 km/h bila veća od brzine putnika. Ako je ukupno trajanje leta u oba smjera iznosilo 3h, kojom je brzinom zrakoplov letio na putu iz Džakova u Berlin?

$$s_1 = s_2 = 880 \text{ km}$$

$$v_1 = v_2 + 20$$

$$t_1 + t_2 = 3 \text{ h}$$

$$v_1 = ?$$

$$v = \frac{s}{t} \rightarrow t = \frac{s}{v} \quad (+1)$$

$$\frac{s_1}{v_1} + \frac{s_2}{v_2} = 3$$

$$\frac{880}{v_2 + 20} + \frac{880}{v_2} = 3 \quad / \cdot v_2(v_2 + 20) \neq 0 \quad (+1)$$

$$v_1 = 576.84 + 20 \quad (+1)$$

$$= 596.84 \text{ km/h}$$

$$880v_2 + 880v_2 + 17600 = 3v_2^2 + 60v_2$$

$$3v_2^2 - 1700v_2 - 17600 = 0 \quad (+1)$$

$$v_{2,1,2} = \dots$$

$$v_{2,1} = 576.84$$

$$v_{2,2} = -10.17$$