## Úlohy

Vyriešte v množine reálnych čísel

$2x^2 + 5 = 10$

$4x^2 = 4x$

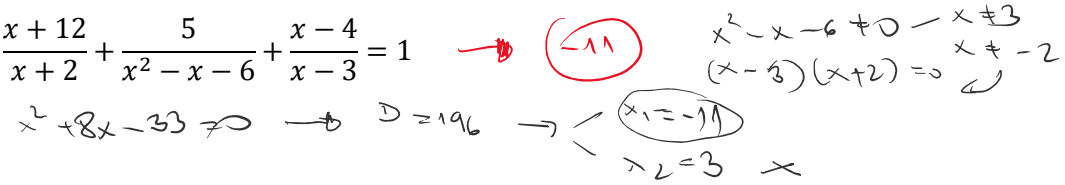
$3x + 2 = \frac{1}{2}x^2$

$x^2 + x - 2x\sqrt{2} - \sqrt{2} = 0$

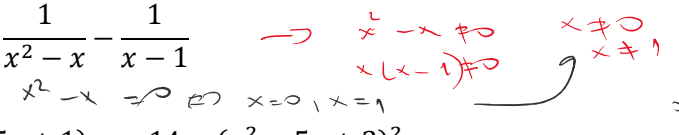
$\frac{2}{2x+3} + \frac{2}{2x-3} = \frac{4x^2-21}{4x^2-9}$

$\frac{x-3}{x+6} + \frac{x-10}{x+5} + \frac{15}{x^2+11x+30} = \frac{9-x}{6+x}$

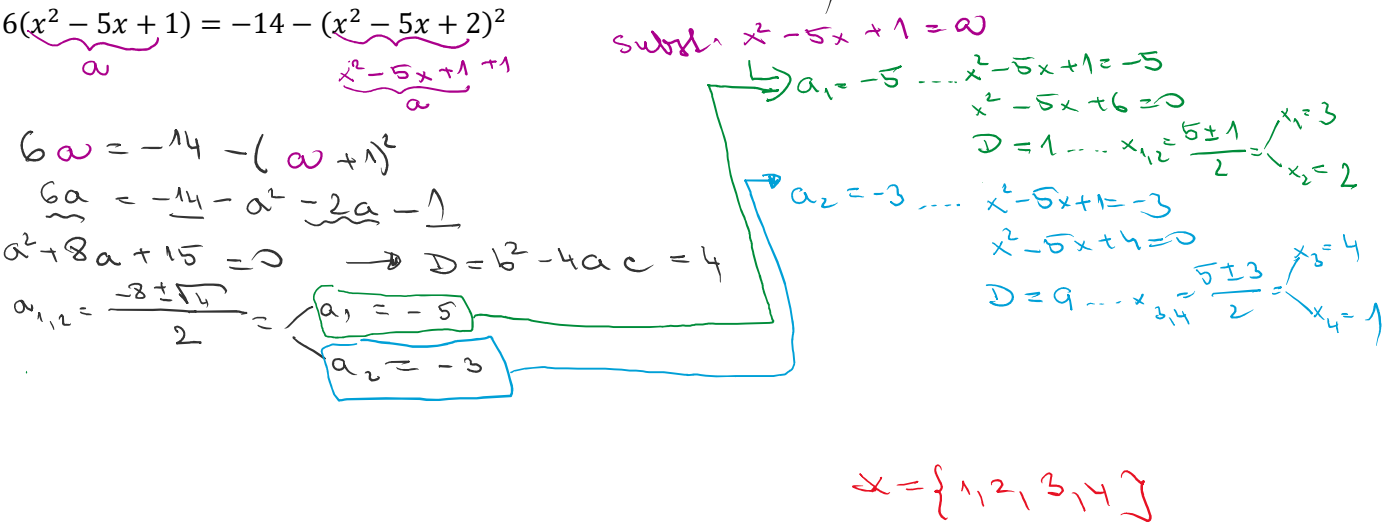
$\frac{x+12}{x+2} + \frac{5}{x^2-x-6} + \frac{x-4}{x-3} = 1$




$1 - \frac{1}{x} = \frac{1}{x^2-x} - \frac{1}{x-1}$




$6(x^2 - 5x + 1) = -14 - (x^2 - 5x + 2)^2$




$x = \{1, 2, 3, 4\}$

$x^2 + 4|x| - 12 = 0$

$x \geq 0$ | $x < 0$

$x \in [0, \infty)$ | $x \in (-\infty, 0)$

$x^2 + 4x - 12 = 0$ | $x^2 - 4x - 12 = 0$

$D = 64$ | $D = 64$

$x_{1,2} = \begin{cases} 2 \checkmark \\ -6 \times \end{cases}$ | $x_{1,2} = \begin{cases} 6 \times \\ -2 \checkmark \end{cases}$

$\mathcal{K} = \{2, -2\}$

$x^2 - |x - 5| = |x| + 3$ ; NB: $x = 5$ ; $x = 0$

| | $(-\infty, 0)$ | $\langle 0, 5)$ | $\langle 5, \infty)$ |
|---|---|---|---|
| $\|x-5\|$ | $-x+5$ | $-x+5$ | $x-5$ |
| $\|x\|$ | $-x$ | $x$ | $x$ |
| | I. | II. | III. |

I. $x^2 + x - 5 = -x + 3$

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

$D = 36$

$x_{1,2} = \begin{cases} 2 \\ -4 \end{cases}$

II. $x^2 + x - 5 = x + 3$

$x^2 - 8 = 0$

$x^2 = 8$

$|x| = \sqrt{8} = 2\sqrt{2}$

$2\sqrt{2}$ | $-2\sqrt{2}$

III. $x^2 - x + 5 = x + 3$

$x^2 - 2x + 2 = 0$

$D = -4$

$x_{1,2} = \langle \emptyset$

$\mathcal{K} = \{-4, 2\sqrt{2}\}$

$(|x| - 3)(x + 1) = -3$

$x \geq 0$ | $x < 0$

$(x-3)(x+1) = -3$ | $(-x-3)(x+1) = -3$

$x^2 - 2x = 0$ | $-x^2 - 4x = 0$

$x(x-2) = 0$ | $-x(x+4) = 0$

$x_1 = 0 \checkmark \quad x_2 = 2 \checkmark$ | $x = 0 \quad x = -4 \checkmark$

$\mathcal{K} = \{0, 2, -4\}$

$|x^2 + 3x| - 4 = 0$

$x^2 + 3x \geq 0$

$x(x+3) \geq 0$

$x \in (-\infty, -3) \cup (0, \infty)$

$x^2 + 3x - 4 = 0$

$D = 25$

$x_{1,2} = \begin{cases} 1 \checkmark \\ -4 \checkmark \end{cases}$

$x^2 + 3x < 0$

$x(x+3) < 0$

$x \in (-3, 0)$

$-x^2 - 3x - 4 = 0$

$D = -7$

$x_{1,2} \in \emptyset$

$\mathcal{K} = \{1, -4\}$