

$$ax^2 + bx + c$$

$$a, b, c \in \mathbb{R}$$

$$a \neq 0$$

$$(x \pm k)^2 = x^2 \pm 2kx + k^2$$

$$(\quad)^2 \pm q$$

ÚPRAVA KVADRATICKÉHO VÝRAZU NA ŠTVRCEC:

$$\text{Pr1: } x^2 + 10x + 22 = (x+5)^2 - 3$$

$$x^2 + 10x + 25 - 3$$

$$22 = 25 - 3$$

$$\text{Pr2: } 3x^2 - 5x + 2 = 3\left(x - \frac{5}{6}\right)^2 - \frac{1}{12}$$

$$3\left(x^2 - \frac{5}{3}x\right) + 2 = 3\left(x^2 - \frac{5}{3}x + \frac{25}{36}\right) - \frac{1}{12} = 3x^2 - 5x + \frac{25}{12} - \frac{1}{12}$$

$$= 3x^2 - 5x + \frac{24}{12}$$

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

$$3\left(x - \frac{5}{6}\right)^2$$

$$3\left(x^2 - \frac{5}{3}x + \frac{25}{36}\right)$$

$$3x^2 - 5x + \frac{25}{12}$$

$$\frac{25}{12} + ? = 2$$

$$-\frac{1}{12}$$

$$(x - k)^2 = x^2 - 2kx + k^2$$

$$\left(x - \frac{5}{6}\right)^2 = x^2 - 2 \cdot \frac{5}{6}x + \left(\frac{5}{6}\right)^2$$

$$x^2 - \frac{5}{3}x + \frac{25}{36}$$

$$-2kx = -\frac{5}{3}x$$

$$k = \frac{5}{6}$$

$$\text{Pr3: } 2 - 2x^2 - 12x = -2(x^2 + 6x) + 2$$

$$-2(x^2 + 6x) + 2$$

$$-2(x+3)^2$$

$$-2(x^2 + 6x + 9)$$

$$-2x^2 - 12x - 18$$

$$x^2 + 6x \rightarrow (x+k)^2 = x^2 + 2kx + k^2$$

$$(x+3)^2 = x^2 + 6x + 3^2$$

$$-18 \xrightarrow{+20} 2$$

$$2 - 2x^2 - 12x = -2(x+3)^2 + 2$$

$$\underline{ax^2 + bx + c} = a(\underline{0x - x_1})(\underline{x - x_2})$$

ÚPRAVA NA SÚČIN KOREŇOVÝCH Činiteľov

Pr: $\underset{2 \cdot 3}{x^2} + \underset{1 \cdot 3}{6x} + \underset{3^2}{9} = (x+3)^2 \quad x_1 = -3$

Pr: $x^2 + 3x + 2 = (x+1)(x+2)$

$$x_1 + x_2 = -3 \quad x_1 = -1$$

$$x_1 \cdot x_2 = 2 \quad x_2 = -2$$

Pz: $x^2 + x - 12 = (x+4)(x-3)$

$$x_1 + x_2 = -1 \quad x_1 = -4$$

$$x_1 \cdot x_2 = -12 \quad x_2 = 3$$

Pz: $x - \frac{1 - \frac{3x}{2}}{4} - \frac{2 - \frac{x}{4}}{3} = 2$

$$x - \frac{\frac{2-3x}{2}}{\frac{4}{1}} - \frac{\frac{8-x}{4}}{\frac{3}{1}} = 2$$

$$x - \frac{2-3x}{8} - \frac{8-x}{12} = 2 \quad | \cdot 24$$

$$24x - 3(2-3x) - 2(8-x) = 48$$

$$\underline{24x} - \underline{6} + \underline{9x} - \underline{16} + \underline{2x} = 48$$

$$35x - 22 = 48 \quad | + 22$$

$$35x = 70 \quad | : 35$$

$$x = 2 \quad K = \{2\}$$

Pz: $\frac{2}{x-3} - \frac{1}{x+2} = \frac{1}{x+6}$

$$x \neq 3; -2; -6$$

$$D(f) = \mathbb{R} - \{-6; -2; 3\}$$

$x_1, x_2 \rightarrow$ korene

a) $(x \pm x_1)^2 = x^2 \pm 2x_1x + x_1^2$

b) $x_1 \cdot x_2 = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

3. VIETOVE VZOREC:

$ax^2 + bx + c \quad x_1, x_2$

$$x_1 + x_2 = \underline{\frac{-b}{a}}$$

$$x_1 \cdot x_2 = \underline{\frac{c}{a}}$$

$$\frac{2}{x-3} - \frac{1}{x+2} - \frac{1}{x+6} = 0$$

$$\frac{2(x+2)(x+6) - 1(x-3)(x+6) - 1(x-3)(x+2)}{(x-3)(x+2)(x+6)} = 0$$

$$\frac{2x^2 + 16x + 24 - x^2 - 3x + 18 - x^2 + x + 6}{(x-3)(x+2)(x+6)} = 0$$

$$\frac{14x + 48}{(x-3)(x+2)(x+6)} = 0$$

$$\frac{a}{b} = 0 \Rightarrow \underline{a} = 0$$

$$14x + 48 = 0 \quad | -48$$

$$14x = -48 \quad | :14$$

$$x = -\frac{48}{14} = -\frac{24}{7}$$

$$K = \left\{ -\frac{24}{7} \right\}$$

$$\underline{P_k}: \frac{3x-1}{5} - \frac{13-x}{2} \geq \frac{4x}{3} - \frac{11(x+3)}{6}$$

$$\frac{3x-1}{5} - \frac{13-x}{2} - \frac{4x}{3} + \frac{11(x+3)}{6} \geq 0$$

$$\frac{18x - 6 - 195 + 15x - 40x + 55x + 165}{30} \geq 0$$

$$\frac{18x - 36}{30} \geq 0$$

$$\frac{a}{a} \geq 0$$

$$\frac{18(x-2)}{30} \geq 0 \Rightarrow x-2 \geq 0 \quad K \in [2; \infty)$$

$$x \geq 2$$

$$\underline{P_k}: -3x^2 - 7x + 6 > 0$$

$$-(3x-2)(x+3) > 0$$

$$K \in \left(-3; \frac{2}{3} \right)$$

