

$$\frac{X^5 - 6X^4 + 5X^3 + 26X^2 - 65X + 30}{X^4 - 3X^3 - 2X^2 + 12X - 8} \quad r=5 \quad P(x) \quad r \rightarrow \text{stupen' polynomu } P(x)$$

$$s=4 \quad Q(x) \quad s \rightarrow \text{stupen' polynomu } Q(x)$$

$$r > s$$

$r \geq s \rightarrow$  racionalna fajra

$r < s \rightarrow$  iracionalna fajra

$$(X^5 - 6X^4 + 5X^3 + 26X^2 - 65X + 30) : (X^4 - 3X^3 - 2X^2 + 12X - 8) = X - 3 + \frac{-2X^3 + 8X^2 - 21X + 6}{X^4 - 3X^3 - 2X^2 + 12X - 8}$$

$$\begin{array}{r} -3X^4 + 9X^3 + 6X^2 + 36X - 24 \\ + 2X^3 + 8X^2 - 21X + 6 \\ \hline -X^5 + 3X^4 + 2X^3 + 12X^2 + 8X \end{array}$$

$$\frac{a}{b} = a:b$$

**DOSADZOVACIA METODA:**

$$\frac{X^5 - 6X^4 + 5X^3 + 26X^2 - 65X + 30}{X^4 - 3X^3 - 2X^2 + 12X - 8} = X - 3 + \frac{-2X^3 + 8X^2 - 21X + 6}{X^4 - 3X^3 - 2X^2 + 12X - 8} = X - 3 + \frac{-3}{(X-1)} + \frac{-2}{(X+2)} + \frac{3}{(X-2)} + \frac{-5}{(X-2)^2}$$

$$1) X^4 - 3X^3 - 2X^2 + 12X - 8 = (X-1)(X^3 - 2X^2 - 9X + 8) = (X-1)(X-2)(X^2 - 4) = (X-1)(X-2)(X-2)(X+2)$$

$$d = \frac{p}{q} = \pm 1; \pm 2; \pm 4; \pm 8 \quad \text{ovim } 1 - 3 - 2 + 12 - 8 = 0 \checkmark$$

$$p = \pm 1; \pm 2; \pm 4; \pm 8$$

$$q = 1$$

|   |        |         |         |       |      |       |
|---|--------|---------|---------|-------|------|-------|
|   | $1x^4$ | $-3x^3$ | $-2x^2$ | $12x$ | $-8$ | $x^0$ |
| 1 | 1      | -3      | -2      | 12    | -8   | 0     |
| 2 | 1      | -2      | 0       | 0     | 0    | X     |

$$\frac{-2X^3 + 8X^2 - 21X + 6}{X^4 - 3X^3 - 2X^2 + 12X - 8} = \frac{-2X^3 + 8X^2 - 21X + 6}{(X-1)(X-2)^2(X+2)} = \frac{A}{(X-1)} + \frac{B}{(X+2)} + \frac{C}{(X-2)} + \frac{D}{(X-2)^2}$$

$$k = \{-2; 1; 2\} \quad A, B, C, D \in \mathbb{R}$$

$$\frac{-2X^3 + 8X^2 - 21X + 6}{(X-1)(X-2)^2(X+2)} = \frac{A(X-2)^2(X+2) + B(X-1)(X-2)^2 + C(X-1)(X-2)(X+2) + D(X-1)(X+2)}{(X-1)(X-2)^2(X+2)}$$

$$\frac{4}{4} = \frac{4}{4} \quad \heartsuit = 4 \quad k = \{-2; 1; 2\}$$

$$-2X^3 + 8X^2 - 21X + 6 = A(X-2)^2(X+2) + B(X-1)(X-2)^2 + C(X-1)(X-2)(X+2) + D(X-1)(X+2)$$

$$1: -2 + 8 - 21 + 6 = A(-1)^2 + B \cdot 0 \cdot (-1)^2 + C \cdot 0 \cdot (-1) \cdot 3 + D \cdot 0 + 3$$

$$-9 = 3A$$

$$-3 = A$$

$$2: -2 \cdot 8 + 8 \cdot 4 - 21 \cdot 2 + 6 = A \cdot 0 \cdot 4 + B \cdot 1 \cdot 0 + C \cdot 1 \cdot 0 \cdot 4 + D \cdot 1 \cdot 4$$

$$-20 = 4D$$

$$-5 = D$$

$$-2: -2 \cdot (-8) + 8 \cdot 4 - 21 \cdot (-2) + 6 = A \cdot (-4) \cdot 0 + B \cdot (-1) \cdot (-4) + C \cdot 1 \cdot (-1) \cdot (-4) + D \cdot (-1) \cdot 0$$

$$96 = -48B$$

$$-2 = B$$

$$D: 6 = A(-2)^2 + B(-1)(-2)^2 + C(-1)(-2) + D(-1) \cdot 2$$

$$6 = -24 + 8 + 4C + 10$$

$$6 = -6 + 4C$$

$$12 = 4C$$

$$3 = C$$

$$\frac{X-3}{X^2-3X^2+5X^2-5X+2} = \frac{X-3}{(X-1)^2(X^2-X+2)} \quad \text{POROVNACIA METODA}$$

$$X^4 - 3X^3 + 5X^2 - 5X + 2 = (X-1)(X^3 - 2X^2 + 3X - 2) = (X-1)(X-1)(X^2 - X + 2)$$

$$1) 1 - 3 + 5 - 5 + 2 = 0 \checkmark \quad \text{HJINE KORENE } d = \frac{p}{q} = \pm 1; \pm 2$$

|   |        |         |        |       |     |       |
|---|--------|---------|--------|-------|-----|-------|
|   | $1x^4$ | $-3x^3$ | $5x^2$ | $-5x$ | $2$ | $x^0$ |
| 1 | 1      | -3      | 5      | -5    | 2   | 0     |
| 1 | 1      | -2      | 3      | -2    | 0   | 0     |

$$X^2 - X + 2 \quad D = b^2 - 4ac = 1 - 8 = -7$$

$$\frac{X-3}{X^4-3X^3+5X^2-5X+2} = \frac{X-3}{(X-1)^2(X^2-X+2)} = \frac{A}{(X-1)} + \frac{B}{(X-1)^2} + \frac{Cx+D}{(X^2-X+2)}$$

$$\frac{X-3}{(X-1)^2(X^2-X+2)} = \frac{A(X-1)(X^2-X+2) + B(X^2-X+2) + (Cx+D)(X-1)^2}{(X-1)^2(X^2-X+2)}$$

$$X-3 = A(X-1)(X^2-X+2) + B(X^2-X+2) + (Cx+D)(X-1)^2$$

$$X-3 = AX^3 - AX^2 + 2AX - AX^2 + BX^2 - Bx + 2B + CX^2 - 2Cx^2 + Cx + Dx^2 - 2Dx + D$$

$$1X^3 = (A+C)X^3 + (-2A+B-2C+D)X^2 + (3A-B+C-2D)X + (-2A+2B+D)$$

$$X^3: A+C=0 \rightarrow A=-C \rightarrow \boxed{A=1}$$

$$X^2: -2A+B-2C+D=0 \rightarrow B+D=0 \rightarrow B=-D \rightarrow \boxed{B=-1}$$

$$X: 3A-B+C-2D=1 \rightarrow -2C-3-2D=1 \rightarrow -2C-D=1$$

$$X^0: -2A+2B+D=-3 \rightarrow 2C+2B+D=-3 \rightarrow 2C-D=-3$$

$$-2D=2 \rightarrow \boxed{D=1}$$

$$2C-1=-3 \rightarrow 2C=-2 \rightarrow \boxed{C=-1}$$

$$\frac{X-3}{X^4-3X^3+5X^2+2} = \frac{X-3}{(X-1)^2(X^2-X+2)} = \frac{1}{X-1} + \frac{-1}{(X-1)^2} + \frac{-X+1}{X^2-X+2}$$

$\rightarrow$  VYSLEDOK