

$$\text{PR1: } R(x) = \frac{2x^2 + 10x - 18}{x^4 - 2x^3 - 5x^2 + 6x} \quad 2 < 4 \quad \text{RYDZORACIONÁLNA}$$

$\frac{2x^2 + 10x - 18}{x(x-1)(x-3)(x+2)} = \frac{A}{x} + \frac{B}{x-1} + \frac{C}{x-3} + \frac{D}{x+2} \quad / \cdot x(x-1)(x-3)(x+2)$

$2x^2 + 10x - 18 = A(x-1)(x-3)(x+2) + Bx(x-3)(x+2) + Cx(x-1)(x+2) + Dx(x-1)(x-3)$

DOSADZOVACIA METÓDA

$x=0$	$-18 = A(-1)(-3) \cdot 2$	$6A = -18$	$A = -3$
$x=1$ ✓	$-6 = B \cdot 1 \cdot (-2) \cdot 3$	$-6B = -6$	$B = 1$
$x=3$	$30 = C \cdot 3 \cdot 2 \cdot 5$	$30C = 30$	$C = 1$
$x=-2$	$-30 = D(-2)(-3)(-5)$	$-30D = -30$	$D = 1$

$$\frac{2x^2 + 10x - 18}{x^4 - 2x^3 - 5x^2 + 6x} = -\frac{3}{x} + \frac{1}{x-1} + \frac{1}{x-3} + \frac{1}{x+2}$$

$$\text{PR2: } R(x) = \frac{5x^2 + 12x + 1}{x^3 + 3x^2 - 4} \quad 2 < 3 \quad \text{RYDZORAC. FCA}$$

$$\frac{5x^2 + 12x + 1}{(x-1)(x+2)^2} = \frac{A}{x-1} + \frac{B}{x+2} + \frac{C}{(x+2)^2} \quad / \cdot (x-1)(x+2)^2$$

$$5x^2 + 12x + 1 = A(x+2)^2 + B(x-1)(x+2) + C(x-1)$$

$x=1$	$18 = A \cdot 3^2$	$9A = 18$	$A = 2$
$x=-2$	$-3 = -3C$		$C = 1$

DOSADÍME AKÉKOĽVEK ČÍSLO, KTORÉ SME ESTE NEZONUJU

$$x=0 \quad 1 = A \cdot 2^2 + B(-1) \cdot 2 + C \cdot (-1)$$

$$A \text{ DOSADÍME } A = 2 \quad \text{a} \quad C = 1$$

$$1 = 2 \cdot 4 + B(-2) + 1 \cdot (-1) \quad -2B = -6 \quad B = 3$$

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

$$\text{PR3: } R(x) = \frac{x^4 + 5x^3 + 11x^2 + 8x - 7}{x^3 + 3x^2 - 4} \quad 4 > 3 \quad \text{NE JE} \\ \text{RYDZORACIONÁLNA}$$

DELIHE

$$\boxed{1} - \boxed{2} - \boxed{3} \sim \boxed{4} \cdot \boxed{5} \rightarrow 2-4-x+2, + \frac{5x^2 + 12x + 1}{(x-1)(x+2)^2}$$

DEFINICE

$$\begin{array}{r}
 - \frac{(x^4 + 5x^3 + 11x^2 + 8x - 4) : (x^3 + 3x^2 - 4)}{(x^4 + 3x^3 - 4x)} \\
 \hline
 - \frac{(2x^3 + 11x^2 + 12x - 4) \checkmark}{(2x^3 + 6x^2 - 8)} \\
 \hline
 \frac{5x^2 + 12x + 1}{x^3 + 3x^2 - 4} \quad PR2
 \end{array}$$

RYDORAC

$$PR4 \quad R(x) = \frac{5x^2 - 5x + 9}{x^3 - 3x^2 + 4x - 12} \quad 2 < 3$$

$$\begin{array}{rcl}
 \frac{5x^2 - 5x + 9}{(x-3)(x^2+4)} & = & \frac{A}{x-3} + \frac{Bx+C}{x^2+4} \quad | \cdot (x-3)(x^2+4) \\
 5x^2 - 5x + 9 & = & A(x^2+4) + (Bx+C)(x-3)
 \end{array}$$

$$\begin{array}{l}
 x=3 \quad 39 = 13A \quad A=3 \\
 x=0 \quad 9 = 3 \cdot 4 + C \cdot (-3) \quad -C=-3 \quad C=1 \\
 x=1 \quad \text{LUBOVNÉ} \quad 9 = 3 \cdot 5 + (B \cdot 1 + 1) \cdot (-2) \quad -2B=-4 \quad B=2
 \end{array}$$

$$\frac{5x^2 - 5x + 9}{(x-3)(x^2+4)} = \frac{3}{x-3} + \frac{2x+1}{x^2+4}$$

$$PR5 \quad R(x) = \frac{5x^2 - x + 8}{x^3 + 4x} \quad 2 < 3 \quad RYDORF.$$

$$\frac{5x^2 - x + 8}{x(x^2+4)} = \frac{A}{x} + \frac{Bx+C}{x^2+4} \quad | \cdot x(x^2+4)$$

$$5x^2 - x + 8 = A(x^2+4) + (Bx+C)x$$

$$x=0 \quad 8 = 4A \quad A=2 \quad \text{SUSTAV}$$

$$\begin{array}{ll}
 x=1 & 12 = 2 \cdot 5 + (B+C) \cdot 1 \\
 x=-1 & 14 = 2 \cdot 5 + (B+C) \cdot (-1) \quad \boxed{\begin{array}{l} B+C=2 \\ B-C=4 \end{array}}
 \end{array}$$

$$\begin{array}{l}
 \text{RIEŠENIE SUSTAVU} \quad \begin{array}{l} B+C=2 \\ B-C=4 \end{array} \\
 \text{SCITANIE} \quad + \quad \frac{2B=6}{B=3} \quad B=3 \\
 \text{ODECIANIE} \quad C=2-B=2-3=-1
 \end{array}$$

$$\frac{5x^2 - x + 8}{x^3 + 4x} = \frac{2}{x} + \frac{3x-1}{x^2+4}$$

$$PRG \quad R(x) = \frac{2x^4 + x^3 - x + 1}{x^3 + 1} \quad \begin{array}{l} 4 > 3 \\ \text{NIE JE RYDZORAC.} \end{array}$$

$$\begin{aligned} & \underline{-} \frac{2x^4 + x^3 - x + 1}{(x^3 + 1)} : (x^3 + 1) = \underline{2x^4 + 1} - \frac{3x^{\boxed{1}}}{x^3 + 1} \\ & \underline{-} \frac{(2x^4 + 2x)}{x^3 + 1} \\ & \underline{-} \frac{(x^3 - 3x + 1)}{(x^3 + 1)} \\ & \underline{-} 3x \end{aligned} \quad \begin{array}{l} \text{RYDZORAC. F} \\ \text{R} \end{array}$$

$$\frac{-3x}{(x+1)(x^2-x+1)} = \frac{A}{x+1} + \frac{Bx+C}{x^2-x+1} \quad | \cdot (x+1)(x^2-x+1)$$

$$-3x = A(x^2-x+1) + \cancel{(Bx+C)}(x+1) \quad \cancel{Bx+C} = 0$$

$$x = -1 \quad 3 = A \cdot 3 \quad A = 1 \quad .$$

$$\boxed{x=0} \quad 0 = 1+C \quad C = -1 \quad .$$

$$x = 1 \quad \text{LUBOVN.} \quad -3 = 1 \cdot 1 + (B-1) \cdot 2 \quad 2B = -2 \quad B = -1 \quad .$$

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

$$\begin{array}{l} x^2 - 4x + 4 = (x-2)^2 \\ x^2 - 2x = x(x-2) \end{array} \quad 3 < 4 \quad \text{RYDZOR. F.}$$

$$PRG \quad R(x) = \frac{3x^3 - 14x^2 + 27x - 16}{(x^2 - 4x + 4) \cdot (x^2 - 2x)} = \frac{3x^3 - 14x^2 + 27x - 16}{(x-2)^2 \cdot x(x-2)}$$

$$\frac{3x^3 - 14x^2 + 27x - 16}{x(x-2)^3} = \frac{A}{x} + \frac{B}{x-2} + \frac{C}{(x-2)^2} + \frac{D}{(x-2)^3} \quad | \cdot x(x-2)^3$$

$$3x^3 - 14x^2 + 27x - 16 = A(x-2)^3 + Bx(x-2)^2 + Cx(x-2) + Dx \quad \cancel{A}, \cancel{B}, \cancel{C}, \cancel{D}$$

$$\begin{array}{l} x=0 \quad -16 = -8A \quad A = 2 \quad . \\ \boxed{x=2} \quad 6 = 2D \quad D = 3 \quad . \end{array} \quad \rightarrow \text{DOSADIT} \quad \checkmark$$

$$\left. \begin{array}{l} x=1 \\ x=-1 \end{array} \right\} \text{LUBOVNÉ} \quad \begin{array}{l} 0 = 2(-1) + B \cdot 1 + C(-1) + 3 \rightarrow B-C = -1 \\ -6 = -2x_2 - B \cdot 9 - C(-3) - 3 \rightarrow 3B-C = 1 \end{array} \quad \boxed{B-C = -1} \quad \boxed{3B-C = 1}$$

RJEŠENÍ S J. STAVU

$$\begin{array}{l} B-C=-1 \\ 3B-C=1 \end{array}$$

ROZDIEL \ominus $2B=2$ $B=1$

$$C=B+1=1+1=2$$

$$\frac{3x^3 - 17x^2 + 27x - 16}{x(x-2)^3} = \frac{2}{x} + \frac{1}{x-2} + \frac{2}{(x-2)^2} + \frac{3}{(x-2)^3}$$

PR 8

$$R(x) = \frac{5x^2 - x + 12}{x^3 + x^2 + 3x - 5} \quad 2 < 3 \quad \text{RYDZORAC. F.}$$

$$\frac{5x^2 - x + 12}{(x-1)(x^2 + 2x + 5)} = \frac{A}{x-1} + \frac{Bx+C}{x^2 + 2x + 5} \quad / \cdot (x-1)(x^2 + 2x + 5)$$

$$5x^2 - x + 12 = A(x^2 + 2x + 5) + (Bx + C)(x-1)$$

POROVNÁVACIA METODA \rightarrow **ROZNAŠOBITE**

$$\begin{aligned} 5x^2 - x + 12 &= A(x^2 + 2x + 5) + Bx^2 - Bx + Cx - C \\ 5x^2 - x + 12 &= (A+B)x^2 + (2A-B+C)x + (5A-C)x^0 \end{aligned}$$

POROVNÁVANIE KOEFICIENTY PRI ROVNAKÝCH MOUVÁCH

$$x^2: \quad 5 = A + B \quad \checkmark$$

$$x^1: \quad -1 = 2A - B + C$$

$$x^0: \quad 12 = 5A - C$$

VYRIEŠIME SÚSTAVU

$$\left(\begin{array}{ccc|c} 1 & 1 & 0 & 5 \\ 2 & -1 & 1 & -1 \\ 0 & 0 & 1 & 12 \end{array} \right) \xrightarrow{\begin{array}{l} -2R_1 \\ -5R_1 \end{array}} \left(\begin{array}{ccc|c} 1 & 1 & 0 & 5 \\ 0 & -3 & 1 & -11 \\ 0 & 0 & 1 & 13 \end{array} \right) \xrightarrow{\begin{array}{l} \cdot (-1) \\ \cdot (-1) \end{array}} \left(\begin{array}{ccc|c} 1 & 1 & 0 & 5 \\ 0 & 3 & -1 & 11 \\ 0 & 0 & 1 & -16 \end{array} \right) \xrightarrow{\begin{array}{l} A+B+0C=5 \\ 3B-1C=11 \\ 8C=-16 \end{array}}$$

$5 \cdot 3 - 5 \cdot 3 = 0$

$8C = -16 \quad C = -2$

$3B - C = 11 \quad 3B = C + 11 = -2 + 11 \quad 3B = 9 \quad B = 3$

$A + B = 5 \quad A = 5 - B = 5 - 3 = 2$

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