

$$x^5 + 4x^3 + 2x^2 + 5 \quad x^2 + 9$$

$$Pr: x^5 + 4x^3 + 2x^2 + 5 + x^2 + 9 = x^5 + 4x^3 + 3x^2 + 14$$

$$Pr: x^5 + 4x^3 + 2x^2 + 5 - (x^2 + 9) = x^5 + 4x^3 + x^2 - 4$$

$$Pr: (x^5 + 4x^3 + 2x^2 + 5) : (x^2 + 9) = x^3 + 4x + 2x^2 + 9x^2 + 63x^3 + 18x^2 + 45$$

$$= x^3 + 16x^5 + 2x^4 + 63x^3 + 23x^2 + 45$$

$$(dl. 5) \cdot (dl. 2) = dl. (5+2) = dl. 7$$

$$x^a \cdot x^b = x^{a+b}$$

$$\begin{array}{r} 4436 : 4 = 646 \\ -42 \\ \hline 53 \\ -49 \\ \hline 46 \\ -42 \\ \hline 4 \end{array}$$

$$4436 : 4 = 646 + \frac{4}{4}$$

$$Pr: (x^5 + 4x^3 + 2x^2 + 5) : (x^2 + 9) = x^3 - 2x + 2$$

$$\begin{array}{r} -(x^5 + 9x^3) \\ \hline -2x^3 + 2x^2 + 5 \\ -(-2x^3 - 18x) \\ \hline 2x^2 + 18x + 5 \\ -(2x^2 + 18) \\ \hline 18x - 13 \end{array}$$

$$x^a \cdot x^b = x^{a+b}$$

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

$$\frac{x^a}{x^b} = x^{a-b}$$

$$(x^5 + 4x^3 + 2x^2 + 5) : (x^2 + 9) = x^3 - 2x + 2 + \frac{18x - 13}{x^2 + 9}$$

$$Pr: (4x^4 + 3x^3 + 2x^2 + x - 36) : (x^3 - x - 1) = 4x + 10x^2 + 9x + 10 + \frac{19x^2 + 20x - 26}{x^3 - x - 1}$$

$$\begin{array}{r} -(4x^4 - 4x^3 - 4x^4) \\ \hline 10x^3 + 9x^4 + x - 36 \\ -(10x^3 - 10x^2 - 10x^2) \\ \hline 9x^4 + 10x^3 + 10x^2 + x - 36 \\ -(9x^4 - 9x^2 - 9x) \\ \hline 10x^3 + 19x^2 + 10x - 36 \\ -(10x^3 - 10x - 10) \\ \hline 19x^2 + 20x - 26 \end{array}$$

$$(4x^4 + 3x^3 + 2x^2 + x - 36) - (4x^4 - 4x^3 - 4x^4) = 4x^3 + 3x^3 + 2x^2 + x - 36 - 4x^4 + 4x^3 + 4x^4 = 8x^3 + 2x^2 + x - 36$$

$$= 0 + 10x^3 + 9x^2 + x - 36$$

$$(x^a)^b = x^{a \cdot b}$$

$$Pr: (x^3 - 12x + 16) = 0 \quad dl. 3$$

$$d = \frac{p}{q} = \pm 1; \pm 2; \pm 4; \pm 8; \pm 16$$

$$p: \pm 1; \pm 2; \pm 4; \pm 8; \pm 16$$

$$q: 1$$

$$\begin{array}{l} d=3 \quad B=-4 \quad p = \frac{1}{7} \\ (x-d) \cdot (x-B) \cdot (x-p) \\ 7 \cdot (x-3) \cdot (x+4) \cdot (x-\frac{1}{7}) = x^2 + 4 = 0 \\ = (x-3)^3 \cdot (x+4) \cdot (7x-1) \\ \frac{(x-2)^3 (x^2+4)}{(x-2)(x-2)} \quad x^2 = -4 \end{array}$$

HORNEROVA SCHEMA:

1	x ³	0	x ²	-12	x	16	x ⁰
1	x ³	1	x ²	-11	x ²	-11	5
							x ² + x - 11
							(x ³ - 12x + 16) : (x - 1) = x ² + x - 11
							-(x ³ - x ²)
							+ x ² - 12x + 16
							-(x ² - x)
							-11x + 16
							-(-11x + 11)
							5

$$x^3 - 12x + 16 = 0$$

$$1: 1^3 - 12 \cdot 1 + 16 = 5$$

$$-1: (-1)^3 - 12 \cdot (-1) + 16 \neq 0$$

$$x^3 - 12x + 16 = (x-2)(x^2 + x - 11)$$

$$= (x-2)(x-2)(x+4) = (x-2)^2(x+4)$$

$$K = \{-4; 2\}$$

$$Pr: 4x^5 - 17x^4 + 24x^3 - 13x^2 + 2x = x(4x^4 - 17x^3 + 24x^2 - 13x + 2)$$

$$d = \frac{p}{q} = \pm 1; \pm 2; \pm 4; \pm 8; \pm 16 \rightarrow \text{VIAZUJEM LEN KLADNE KORENE}$$

$$p: \pm 1; \pm 2$$

$$q: 1; 2; 4$$

$$4x^4 - 17x^3 + 24x^2 - 13x + 2$$

$$1: 4 \cdot 1^4 - 17 \cdot 1^3 + 24 \cdot 1^2 - 13 \cdot 1 + 2 = 0 \checkmark$$

OVERIM DOSADENIM:

1 JE KOREN, TJ. DOSADIM DO HORNEROVEJ SCHEMY

	4x ⁴	-17x ³	24x ²	-13x	2	x ⁰
1	4x ⁴	-13x ³	11x ²	-2x ³	0	2
1	4x ³	-9x ²	2x ³	0	0	0
2	4x ²	-1x ³	0	0	0	0

$$\rightarrow (x-1)(4x^3 - 13x^2 + 11x + 2)$$

$$\rightarrow (x-1)(x-1)(4x^2 - 9x + 2)$$

$$\rightarrow (x-1)(x-1)(x-2)(4x-1)$$

$$ROZKLAD: 4x^5 - 17x^4 + 24x^3 - 13x^2 + 2x = x(x-1)^2(x-2)(4x-1)$$

$$K = \{0; 1; 2; \frac{1}{4}\}$$

$$Pr: (x^4 + x^3 + x^2 + 11x + 10) = 0$$

KEDEZ VSECKY KOEFICIENY V POLYNOME SU KLADNE

$$d = \frac{p}{q} = \pm 1; \pm 2; \pm 5; \pm 10 \rightarrow \text{VIAZUJEM LEN ZAPORNE KORENE}$$

$$p: \pm 1; \pm 2; \pm 5; \pm 10$$

$$q: 1$$

ČISLO -1 OVERIM DOSADENIM

$$-1: (-1)^4 + (-1)^3 + (-1)^2 + 11 \cdot (-1) + 10 = 0 \checkmark$$

JE KOREN, TJ. DOSADIM -1 DO HORNEROVEJ SCHEMY

	1	x ⁴	1	x ³	1	x ²	11	x	10	x ⁰
-1	1	x ⁴	0	x ³	0	x ²	0	10	0	0
-2	1	x ³	-2	x ²	5	x	10	0	0	0

$$\rightarrow (x+1)(x^3 + x^2 + 10)$$

$$\rightarrow (x+1)(x+2)(x^2 - 2x + 5)$$

3 -> OVERIM -1: (-1)^3 - 1 + 10 = 0 X
-1 UZ NIE JE KOREN, PRETO OVERIM DALSE ČISLO, NAPP. -2

ROZKLAD:

$$x^4 + x^3 + x^2 + 11x + 10 = (x+1)(x+2)(x^2 - 2x + 5)$$

X^2 - 2x + 5 NEMA REALNE KORENE, TAZEG MO NEMEM DALSEJ ROZLOZIT

$$K = \{-1; -2\}$$

VYSLEDOK

$$D = b^2 - 4ac = (-2)^2 - 4 \cdot 1 \cdot 5 = 4 - 20 = -16$$

$$\sqrt{-16} \notin \mathbb{R}$$