

1. Funkciu $f(x)$ napíšte ako súčet elementárnych zlomkov.

a) $f(x) = \frac{5-x}{(x-2)(x+1)} = \frac{A}{x-2} + \frac{B}{x+1} \implies$
 $5-x = A(x+1) + B(x-2)$ dosadíme
 $x = -1: 6 = -3B \implies B = -2; \quad x = 2: 3 = 3A \implies A = 1, \quad \underline{f(x) = \frac{1}{x-2} + \frac{-2}{x+1}}$

b) $f(x) = \frac{x-5}{(x-2)(x+1)} = \frac{A}{x-2} + \frac{B}{x+1} \implies$
 $x-5 = A(x+1) + B(x-2)$ dosadíme
 $x = -1: -6 = -3B \implies B = 2; \quad x = 2: -3 = 3A \implies A = -1, \quad \underline{f(x) = \frac{-1}{x-2} + \frac{2}{x+1}}$

c) $f(x) = \frac{3x-3}{(x-2)(x+1)} = \frac{A}{x-2} + \frac{B}{x+1} \implies$
 $3x-3 = A(x+1) + B(x-2)$ dosadíme
 $x = -1: -6 = -3B \implies B = 2; \quad x = 2: 3 = 3A \implies A = 1, \quad \underline{f(x) = \frac{1}{x-2} + \frac{2}{x+1}}$

2. Urte násobnosť koreňa c polynómu $f(x)$

a) $f(x) = 2x^4 - 11x^3 + 18x^2 - 4x - 8, \quad c = 2$

$$\begin{array}{r|rrrrr} & 2 & -11 & 18 & -4 & -8 \\ 2 & 2 & -7 & 4 & 4 & \underline{0} \\ 2 & 2 & -3 & -2 & \underline{0} \\ 2 & 2 & 1 & \underline{0} \end{array}$$

$$f(x) = (x-2)^3(2x+1), \quad \underline{k=3}$$

b) $f(x) = x^4 - 2x^3 - 2x^2 + 8 \quad c = 2$

$$\begin{array}{r|rrrrr} & 1 & -2 & -2 & 0 & 8 \\ 2 & 1 & 0 & -2 & -4 & \underline{0} \\ 2 & 1 & 2 & 2 & \underline{0} \\ 2 & 1 & 4 & \underline{10 \neq 0} \end{array}$$

$$f(x) = (x-2)^2(x^2 + 2x + 2), \quad \underline{k=2}$$

c) $f(x) = x^4 + 5x^3 + 9x^2 + 8x + 4, \quad c = -2$

$$\begin{array}{r|rrrrr} & 1 & 5 & 9 & 8 & 4 \\ -2 & 1 & 3 & 3 & 2 & \underline{0} \\ -2 & 1 & 1 & 1 & \underline{0} \\ -2 & 1 & -1 & \underline{3 \neq 0} \end{array}$$

$$f(x) = (x+2)^2(x^2 + x + 1), \quad \underline{k=2}$$
