

Cvičení 6

1. Určete znaménko mnohočlenu a načrtněte jeho graf

- a) $P(x) = x^3(x+1)^2(x-2)$, b) $P(x) = x^4 - x$,
 c) $P(x) = x^6 - 3x^4 - 4x^2$, d) $P(x) = (x+1)^3(1-x^2)$,
 e) $P(x) = (x^2+1)(x^2-2)(x-1)^3$, f) $P(x) = (x^3-x^2)(x+2)^3$,
 g) $P(x) = (x^2-x+1)(x+2)(x^2-4)$, h) $P(x) = x^2(x-1)^3(2x+4)(x^2+1)$,
 i) $P(x) = (x-1)^2(x+1)(x^2-3x-4)$, j) $P(x) = (2x-1)^3(x+1)^2$,

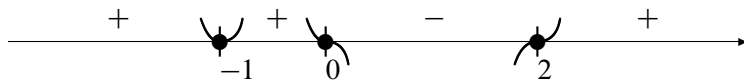
2. Určete znaménko racionální funkce a načrtněte její graf:

- a) $R(x) = \frac{(x-3)(x-1)}{x+4}$, b) $R(x) = \frac{(x+1)^2(x+3)}{x-2}$, c) $R(x) = \frac{x^2+x}{x^2-4x+4}$,
 d) $R(x) = \frac{x^3-1}{x^3+1}$, e) $R(x) = \frac{2x+1}{x^2+2x-3}$, f) $R(x) = \frac{(x^3-2x^2)(x+3)}{x+1}$,
 g) $R(x) = \frac{x^4+x^3-2x^2}{x+1}$, h) $R(x) = \frac{(x+3)(x-1)^3}{(x+1)^2(x+2)}$, i) $R(x) = \frac{(x+2)^2(x^2+3x)}{(x^2-4)(x+2)}$.

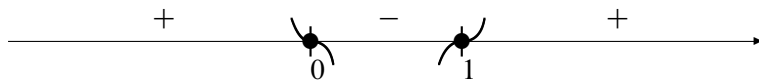
Výsledky:

Př 1.

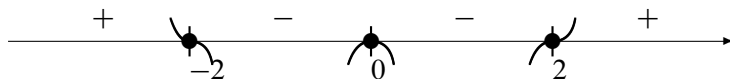
a) Rozklad v \mathbb{R} : $P(x) = x^3(x+1)^2(x-2)$. Náčrt grafu:



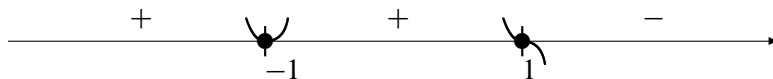
b) Rozklad v \mathbb{R} : $P(x) = x(x-1)(x^2+x+1)$. Náčrt grafu:



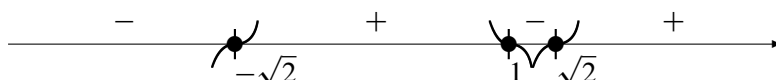
c) Rozklad v \mathbb{R} : $P(x) = x^2(x-2)(x+2)(x^2+1)$. Náčrt grafu:



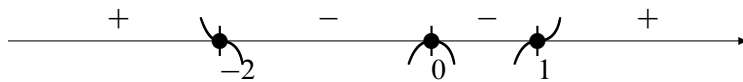
d) Rozklad v \mathbb{R} : $P(x) = -(x+1)^4(x-1)$. Náčrt grafu:



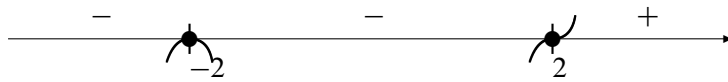
e) Rozklad v \mathbb{R} : $P(x) = (x^2+1)(x-\sqrt{2})(x+\sqrt{2})(x-1)^3$. Náčrt grafu:



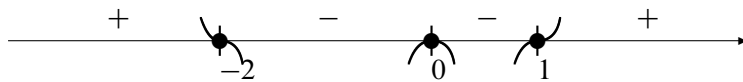
f) Rozklad v \mathbb{R} : $P(x) = x^2(x - 1)(x + 2)^3$. Náčrt grafu:



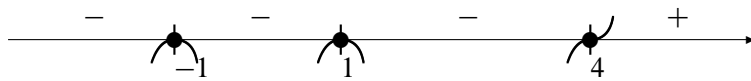
g) Rozklad v \mathbb{R} : $P(x) = (x^2 - x + 1)(x + 2)^2(x - 2)$. Náčrt grafu:



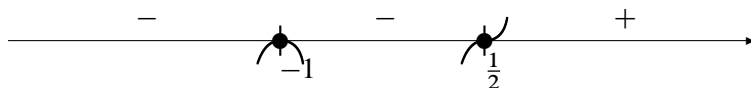
h) Rozklad v \mathbb{R} : $P(x) = 2x^2(x - 1)^3(x + 2)(x^2 + 1)$. Náčrt grafu:



i) Rozklad v \mathbb{R} : $P(x) = (x - 1)^2(x + 1)^2(x - 4)$. Náčrt grafu:



j) Rozklad v \mathbb{R} : $P(x) = 2^3(x - \frac{1}{2})^3(x + 1)^2$. Náčrt grafu:

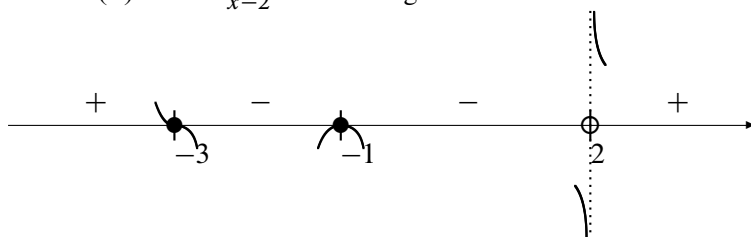


Př 2.

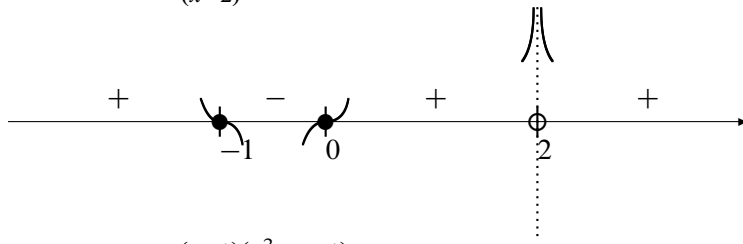
a) Rozklad v \mathbb{R} : $R(x) = \frac{(x-3)(x-1)}{x+4}$. Náčrt grafu:



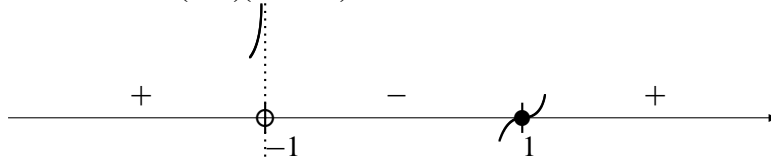
b) Rozklad v \mathbb{R} : $R(x) = \frac{(x+1)^2(x+3)}{x-2}$. Náčrt grafu:



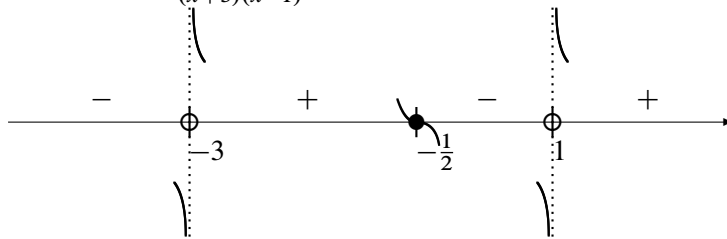
c) Rozklad v \mathbb{R} : $R(x) = \frac{x(x+1)}{(x-2)^2}$. Náčrt grafu:



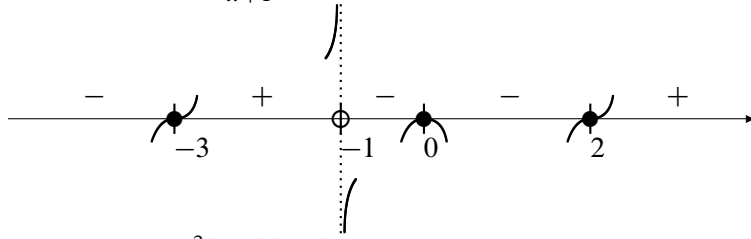
d) Rozklad v \mathbb{R} : $R(x) = \frac{(x-1)(x^2+x+1)}{(x+1)(x^2-x+1)}$. Náčrt grafu:



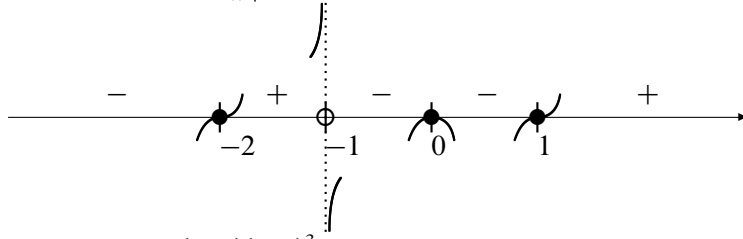
e) Rozklad v \mathbb{R} : $R(x) = \frac{2(x+\frac{1}{2})}{(x+3)(x-1)}$. Náčrt grafu:



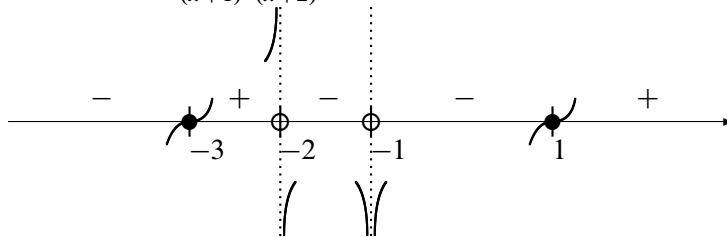
f) Rozklad v \mathbb{R} : $R(x) = \frac{x^2(x-2)(x+3)}{x+1}$. Náčrt grafu:



g) Rozklad v \mathbb{R} : $R(x) = \frac{x^2(x-1)(x+2)}{x+1}$. Náčrt grafu:



h) Rozklad v \mathbb{R} : $R(x) = \frac{(x+3)(x-1)^3}{(x+1)^2(x+2)}$. Náčrt grafu:



i) Rozklad v \mathbb{R} : $R(x) = \frac{x(x+3)}{(x-2)}$, $x \neq -2$. Náčrt grafu:

