

KVADRATICKÁ FUNKCE

1. Funkční předpis kvadratické funkce f zapište rovnicí, víte-li, že platí:

$$f(1) = -2, f(2) = 4, f(3) = 4.$$

$$\left[y = -3x^2 + 15x - 14. \right]$$

2. Funkční předpis kvadratické funkce f zapište rovnicí, víte-li, že graf funkce f prochází body $K[0; -3]$, $L[1; 0]$, $M[-1; -4]$.

$$\left[y = x^2 + 2x - 3. \right]$$

3. Funkční předpis kvadratické funkce f zapište rovnicí, víte-li, že platí: funkce f je sudá v \mathbb{R} , hodnota minima je -8 a jeden z průsečíků grafu funkce s osou x má souřadnice $[2; 0]$.

$$\left[y = 2x^2 - 8. \right]$$

4. Funkční předpis kvadratické funkce f zapište rovnicí, víte-li, že platí: funkce f pro $x = 2$ nabývá maxima, přičemž hodnota maxima je 4 a osu y protíná graf funkce f v bodě $[0; 1]$.

$$\left[y = -\frac{3}{4}x^2 + 3x + 1. \right]$$

5. Načrtněte grafy funkcí (určete souřadnice vrcholu, souřadnice průsečíků grafu s osou x a s osou y , načrtněte graf, určete obor funkčních hodnot):

$$f_1: y = x^2 + 4x + 3$$

$$f_4: y = -x^2 - 3x$$

$$f_7: y = 3x^2 + 6x + 3$$

$$f_2: y = x^2 - 6x + 9$$

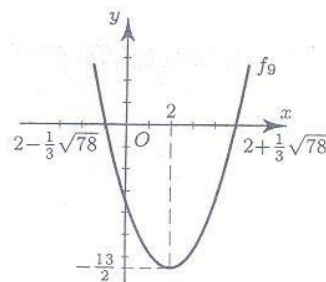
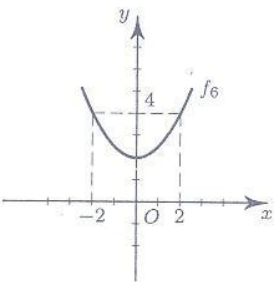
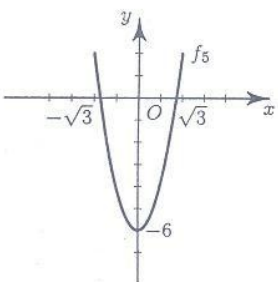
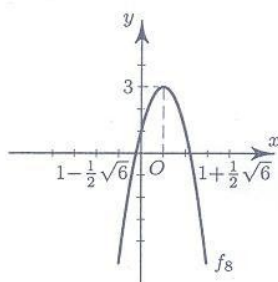
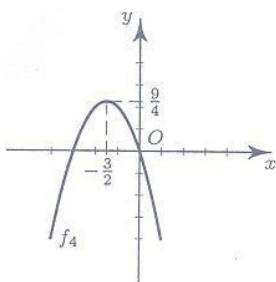
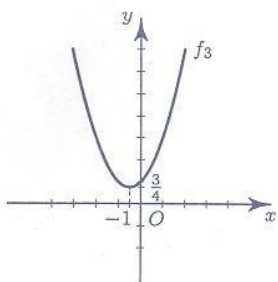
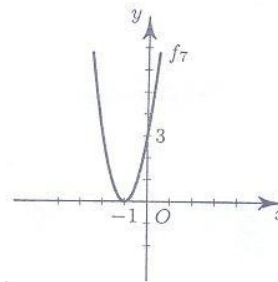
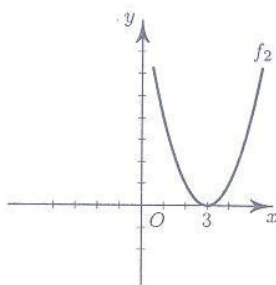
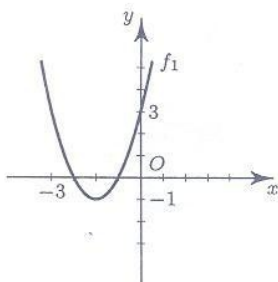
$$f_5: y = 2x^2 - 6$$

$$f_8: y = -2x^2 + 4x + 1$$

$$f_3: y = x^2 + x + 1$$

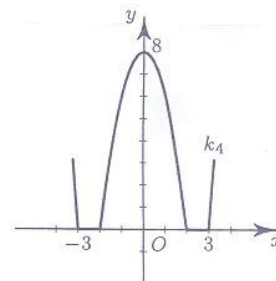
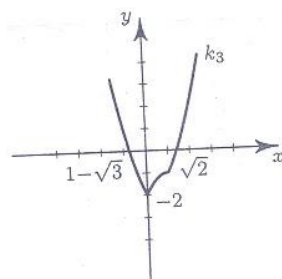
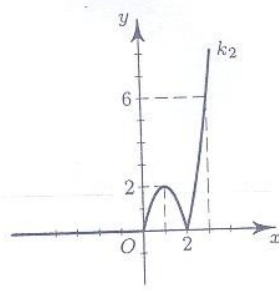
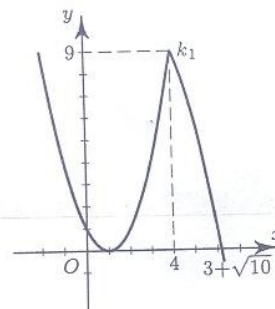
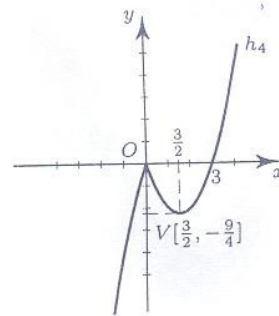
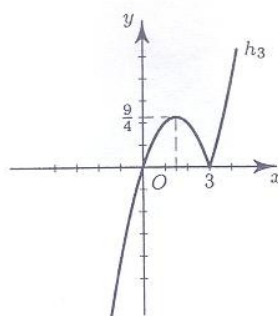
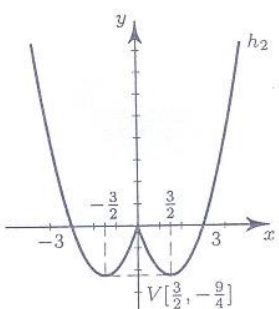
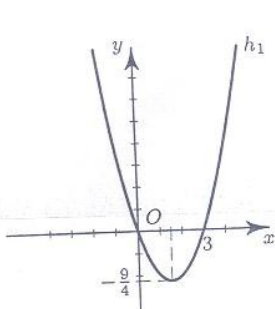
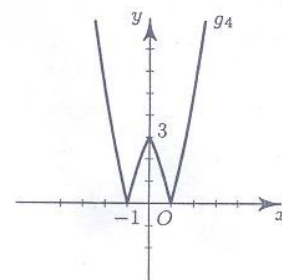
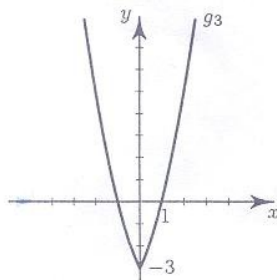
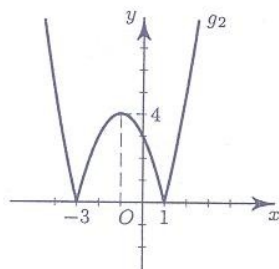
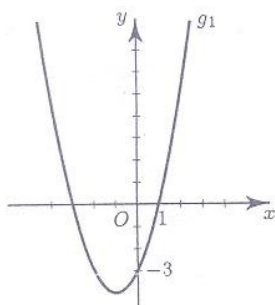
$$f_6: y = \frac{1}{2}x^2 + 2$$

$$f_9: y = \frac{3}{4}x^2 - 3x - \frac{7}{2}$$



6. Načrtněte grafy funkcí:

$$\begin{aligned}
 g_1: y &= x^2 + 2x - 3 & h_1: y &= x^2 - 3x & k_1: y &= |2x + 1| - x|x - 4| \\
 g_2: y &= |x^2 + 2x - 3| & h_2: y &= x^2 - 3|x| & k_2: y &= x|x - 2| + |x^2 - 2x| \\
 g_3: y &= x^2 + 2|x| - 3 & h_3: y &= x|x - 3| & k_3: y &= |x^2 - x| + |x| - 2 \\
 g_4: y &= |x^2 + 2|x| - 3| & h_4: y &= |x|(x - 3) & k_4: y &= |9 - x^2| + |4 - x^2| - 5
 \end{aligned}$$



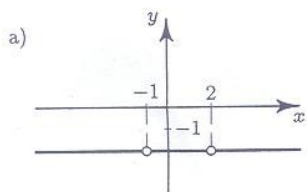
7. Načrtněte grafy daných funkcí:

a) $y = \left(\frac{x-5}{x+1} + 1\right) : \left(1 - \frac{2x-1}{x+1}\right)$

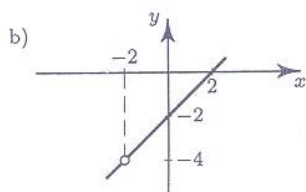
c) $y = \left(x+2 + \frac{2}{x-1}\right) \cdot \left(x-2 + \frac{2}{x+1}\right)$

b) $y = \frac{x^3 - 8}{\frac{x^2 + 4}{x+2} + \frac{2x}{x+2}} : \frac{x^3 + 8}{(x-2)^2 + 2x}$

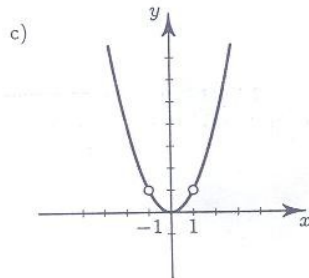
d) $y = \frac{x^3 - 4x + x^2 - 4}{x^2 - x - 2} \cdot x$



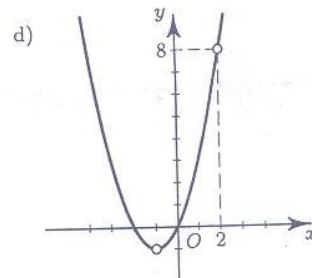
a) $y = -2; D = \mathbb{R} - \{-1; 2\}$



b) $y = x - 2; D = \mathbb{R} - \{-2\}$



c) $y = x^2; D = \mathbb{R} - \{\pm 1\}$



d) $y = x^2 + 2x; D = \mathbb{R} - \{-1; 2\}$