

4. Funkce.

1. Načrtněte grafy funkcí

$$y = 2x - 2$$

$$y = x^2 + 2x + 2$$

$$y = |x^2 - 1|$$

$$y = \frac{x-1}{x-2}$$

$$y = \sqrt[3]{x+2}$$

$$y = 4^{|x|}$$

$$y = -\log_4 x$$

$$y = |x-2| - 2|x-5| + 1$$

$$y = |x-1| - |x+1|$$

$$y = |1-x^2| + x$$

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

$$y = 4^{x-1}$$

$$y = \log(x-3)$$

$$y = \log_4(-x)$$

$$y = x^2 - 2x + 3$$

$$y = -x^2 - 2x - 2$$

$$y = 3x - 3[x]$$

$$y = \left| \frac{1}{x-1} + 1 \right|$$

$$y = 4^x + 2$$

$$y = \log x - 3$$

$$y = \left(\frac{1}{4} \right)^{x-2} + 3$$

2. Urči definiční obor funkcí

$$f_1(x) = \sqrt{x+4} + \sqrt{\frac{7}{10-x}}$$

$$f_2(x) = \frac{x^2+1}{x^2+x+1}$$

$$f_3(x) = \frac{1}{|x+3|-4}$$

$$f_4(x) = \frac{1}{\log_2(x+4)-3}$$

$$f_5(x) = \sqrt{\log_{\frac{1}{3}}(2x+1)}$$

$$f_6(x) = \frac{1}{\sqrt{2x^2+3x-2}}$$

3. Řeš exponenciální a logaritmické rovnice:

$$a) 2^{3x-1} \cdot 4 = 8^{x+1} \cdot \left(\frac{1}{2} \right)^x$$

$$b) 3^x + 3^{x+1} = 108$$

$$c) 3^x \cdot \left(\frac{1}{2} \right)^x + 3^{x+1} \cdot \left(\frac{1}{2} \right)^{x+1} = \frac{5}{3}$$

$$d) 5^{2x} \cdot (5^{2x} - 5) = 3 \cdot (5^{2x+1} + 5^{2x}) + 50$$

$$e) 3^x = 10$$

$$f) 2^x - 3^x = 2^{x-1} + 5 \cdot 3^{x-1}$$

$$g) \log_6(x+1) + \log_6 x = 1$$

$$h) \log_8 \sqrt{x+30} + \log_8 \sqrt{x} = 1$$

$$i) \log_2 [14 + 2 \log_7 (1 + 2 \log_{0,5} x)] = 4$$

$$j) \log_3 \frac{6x-2}{x-3} = 2$$

$$k) \frac{\log x}{\log(x-2)} = \frac{\log 9}{\log 3}$$

$$l) \log_2^2 x + 2 \log_2 x - 3 = 0$$

$$m) \frac{\log x + 3}{3 - \log x} = 5$$

$$n) \frac{\log x + 1}{2 + \log x} + \frac{2 \log x - 1}{\log x} = 3$$