Určete definiční obor:

1) $f(x) = \arccos \frac{x+2}{3} + \sqrt{x^2+3x}$

2) $f(x) = \frac{\ln(9-x^2)}{3x-4} + \arcsin(x-1)$

3) $f(x) = \cos x - \sqrt{x^2-3x-4} + \arcsin \frac{x-4}{5}$

4) $f(x) = \ln(-x^2-3x-2) - \arccos \frac{2x+4}{5}$

5) $f(x) = \frac{\sqrt{3x-x^2}}{\operatorname{arctg} x} - \arcsin 2$

6) $f(x) = \frac{2}{\arcsin x} - \frac{1}{\ln(x+3)}$

7) $f(x) = \arccos\left(2+\frac{x}{3}\right) + \operatorname{arctg} \frac{x+1}{x+4}$

8) $f(x) = \frac{\arcsin(3x-1)}{\sqrt{2x-1}}$

9) $f(x) = \frac{\log_2(x^2+x-6)}{\arccos \frac{x}{3}}$

10) $f(x) = \frac{\sin(x+1)}{\operatorname{arccotg} x} - \sqrt{x^2+1}$

1)

$-1 \le \frac{x+2}{3} \le 1 \quad /\cdot 3$

$-3 \le x+2 \le 3 \quad /-2$

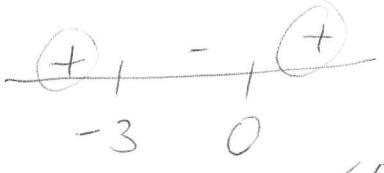
$-5 \le x \le 1$

$\langle -5; 1 \rangle$

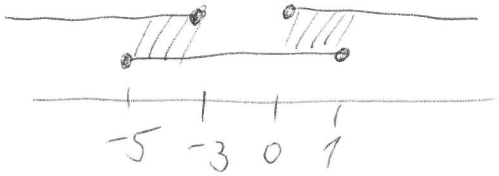
$x^2 + 3x \ge 0$

$x(x+3) \ge 0$

$x=0 \quad x=-3$




$(-\infty; -3\rangle \cup \langle 0; \infty)$



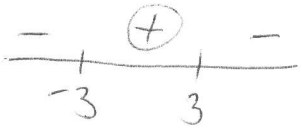

$Df = \langle -5; -3\rangle \cup \langle 0; 1\rangle$

2)

$9 - x^2 > 0$

$(3-x)(3+x) = 0$

$x = 3 \quad x = -3$




$(-3; 3)$

$3x - 4 \ne 0$

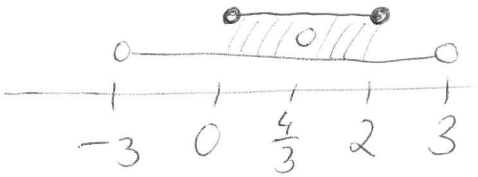
$3x \ne 4$

$x \ne \frac{4}{3}$

$-1 \le x-1 \le 1 \quad /+1$

$0 \le x \le 2$

$\langle 0; 2\rangle$



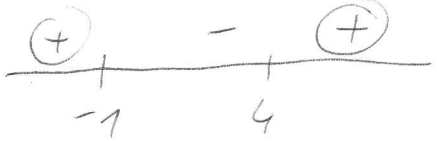

$Df = \langle 0; \frac{4}{3}) \cup (\frac{4}{3}; 2\rangle$

3)

$x^2 - 3x - 4 \ge 0$

$(x-4)(x+1) = 0$

$x=4 \quad x=-1$



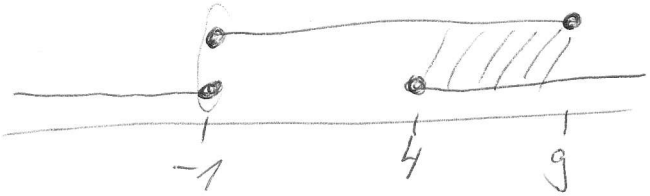

$(-\infty; -1\rangle \cup \langle 4; \infty)$

$-1 \le \frac{x-4}{5} \le 1 \quad /\cdot 5$

$-5 \le x-4 \le 5 \quad /+4$

$-1 \le x \le 9$

$\langle -1; 9\rangle$

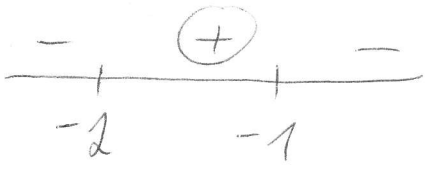



$Df = \{-1\} \cup \langle 4; 9\rangle$

4) $-x^2-3x-2>0$

$-(x^2+3x+2)=0$

$-(x+2)(x+1)=0$




$(-2;-1)$

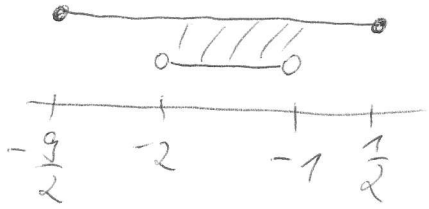
$-1 \le \frac{2x+4}{5} \le 1 \quad /\cdot 5$

$-5 \le 2x+4 \le 5 \quad /-4$

$-9 \le 2x \le 1 \quad /:2$

$-\frac{9}{2} \le x \le \frac{1}{2}$

$\langle -\frac{9}{2}; \frac{1}{2} \rangle$

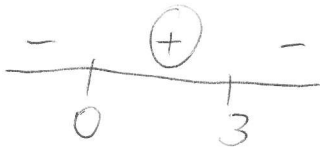



$Df = (-2;-1)$

5) $3x-x^2 \ge 0$

$x(3-x)=0$

$x=0 \quad 3=x$




$\langle 0;3 \rangle$

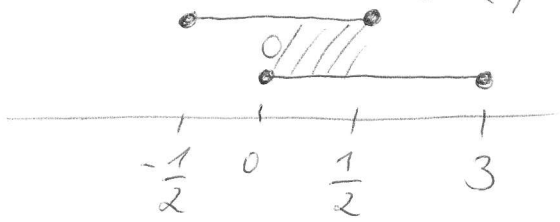
$\operatorname{arctg} x \neq 0$

$x \neq 0$

$-1 \le 2x \le 1 \quad /:2$

$-\frac{1}{2} \le x \le \frac{1}{2}$

$\langle -\frac{1}{2}; \frac{1}{2} \rangle$




$Df = (0; \frac{1}{2}\rangle$

6) $\arcsin x \neq 0$

$x \neq 0$


$\ln(x+3) \neq 0$

$x+3 \neq e^0$

$x+3 \neq 1$

$x \neq -2$

$x+3>0$

$x>-3$

$(-3;\infty)$

$Df = (-3;\infty) - \{-2;0\}$

7) $-1 \le 2 + \frac{x}{3} \le 1 \quad /\cdot 3$

$-3 \le 6 + x \le 3 \quad /-6$

$-9 \le x \le -3$

$\langle -9; -3 \rangle$

$x + 4 \neq 0$

$x \neq -4$

$Df = \langle -9; -4) \cup (-4; -3 \rangle$

8) $-1 \le 3x - 1 \le 1 \quad /+1$

$0 \le 3x \le 2 \quad /\cdot 3$

$0 \le x \le \frac{2}{3}$

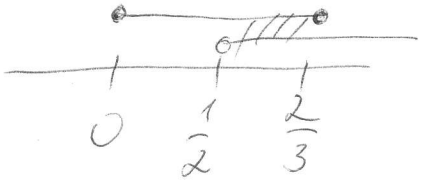
$\langle 0; \frac{2}{3} \rangle$

$2x - 1 > 0$

$2x > 1$

$x > \frac{1}{2}$

$(\frac{1}{2}; \infty)$




$Df = (\frac{1}{2}; \frac{2}{3} \rangle$

9) $x^2 + x - 6 > 0$

$(x-2)(x+3) = 0$

$x = 2 \quad x = -3$


$(-\infty, -3) \cup (2, \infty)$

$\arccos \frac{x}{3} \neq 0$

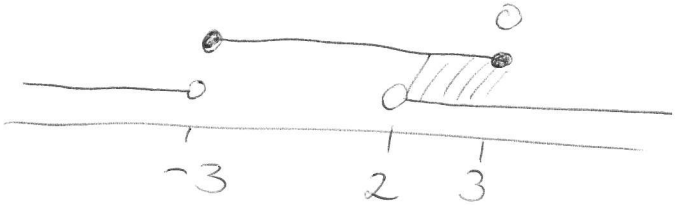
$\frac{x}{3} \neq 1$

$x \neq 3$

$-1 \le \frac{x}{3} \le 1$

$-3 \le x \le 3$

$\langle -3; 3 \rangle$




$Df = (2; 3)$

10) $\operatorname{arccotg} x \neq 0$

to platí vždy

arccotg není nikdy 0.

$x^2 + 1 \ge 0$

nelze rozložit

$x^2 \ge -1$ platí vždy

$Df = R$