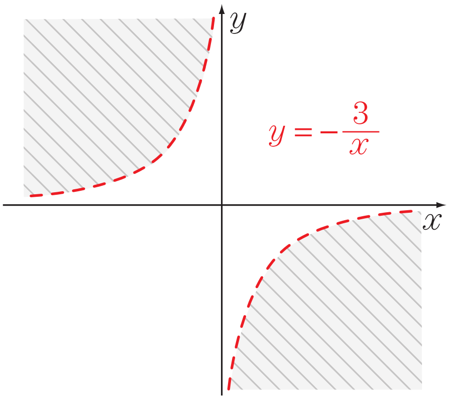
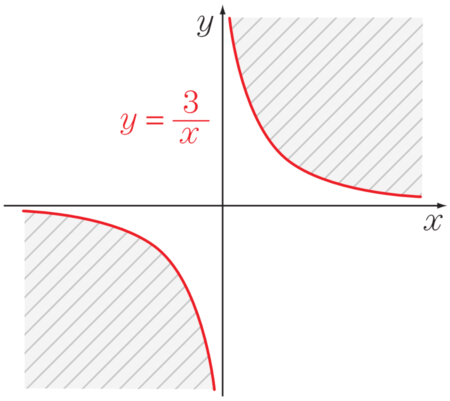
c) $D_z = \{[x, y] \in \mathbb{R}^2 \,|\, xy < -3\}$ d) $D_z = \{[x, y] \in \mathbb{R}^2 \,|\, xy \geq 3\}$



Obr. 4.1.23

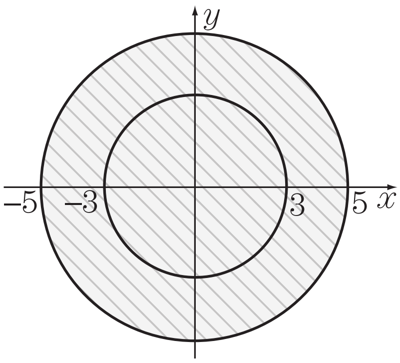


Obr. 4.1.24

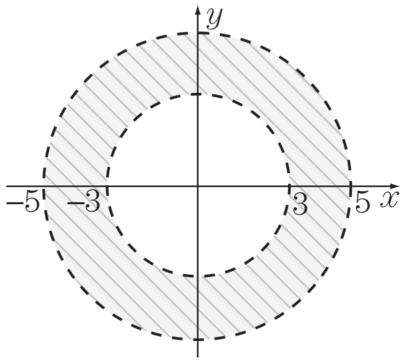
3. Určete a načrtněte definiční obor funkce $z = \arcsin \dfrac{x^2 + y^2 - 17}{8}$.

a) $D_z = \{[x, y] \in \mathbb{R}^2 \,|\, x^2 + y^2 = 9 \vee x^2 + y^2 \leq 25\}$

b) $D_z = \{[x, y] \in \mathbb{R}^2 \,|\, x^2 + y^2 > 9 \wedge x^2 + y^2 < 25\}$



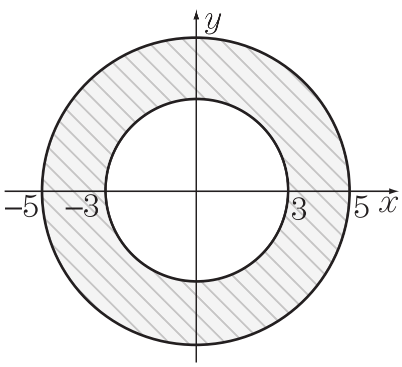
Obr. 4.1.25



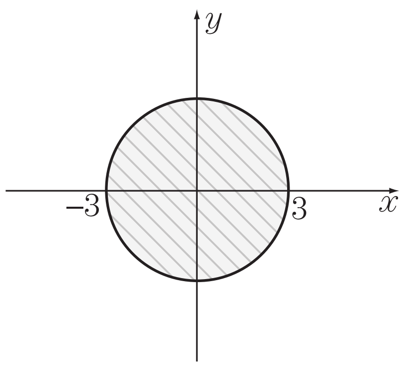
Obr. 4.1.26

c) $D_z = \{[x, y] \in \mathbb{R}^2 \,|\, x^2 + y^2 \geq 9 \wedge x^2 + y^2 \leq 25\}$

d) $D_z = \{[x, y] \in \mathbb{R}^2 \,|\, x^2 + y^2 \leq 9\}$



Obr. 4.1.27



Obr. 4.1.28

Vrstevnice $f(x,y) = \dfrac{1}{x^2+2y^2}$

$c \leq 0$ nelze

$c > 0$:

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

$$1 = c x^2 + c\,2y^2$$

$$1 = \frac{x^2}{\frac{1}{c}} + \frac{y^2}{\frac{1}{2c}}$$ elipsa

$$f(x,y) = \underline{x^2y} - \underline{x^3} + 17y^2 - \underline{xy} + 5$$

$x^2 \cdot 4 - x^3 + 17 \cdot (4)^2 - x4 + 5$

$$\frac{\partial f}{\partial x} = y \cdot 2x - 3x^2 + 0 - y \cdot 1 + 0$$

$x,\quad y$ jako konst $\qquad [x,y] \in \mathbb{R}^2$

$$\frac{\partial f}{\partial y} = x^2 \cdot 1 - 0 + 34y - x \cdot 1 + 0$$

x jako konst.

$$f(x,y) = \frac{\ln(xy)}{xy} \qquad xy > 0$$

$$\frac{\partial f}{\partial x} = \frac{\frac{1}{xy} \cdot 1y \cdot xy - \ln(xy) \cdot 1y}{(xy)^2}$$

$$\frac{\partial f}{\partial y} = \frac{\frac{1}{xy} \cdot x \cdot xy - \ln(xy) \cdot 1 \cdot x}{(xy)^2}$$