VRSTEVNICE FUNKCÍ VÍCE PROMĚNNÝCH

Určete definiční obor funkce f, načrtněte její vrstevnice a určete obor hodnot.

1. $f(x,y) = x + 2y$

2. $f(x,y) = x + \sqrt{y}$

3. $f(x,y) = \dfrac{y}{x}$

4. $f(x,y) = x^2 + y^2$

5. $f(x,y) = x^2 - y^2$

6. $f(x,y) = |x| + y$

7. $f(x,y) = \sqrt{xy}$

8. $f(x,y) = \sqrt{1 - x^2 - y^2}$

9. $f(x,y) = \dfrac{1}{\sqrt{x^2 + y^2 - 1}}$

10. $f(x,y) = \operatorname{sgn}(\sin x \cdot \sin y)$

11. $f(x,y) = \sqrt{(x^2 + y^2 - 1)(4 - x^2 - y^2)}$

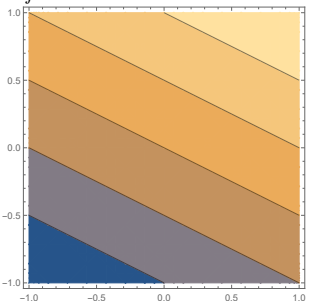
12. $f(x,y) = \sqrt{1 - (x^2 + y)^2}$

13. $f(x,y) = \sqrt{\sin(x^2 + y^2)}$

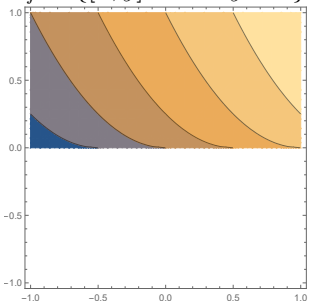
VÝSLEDKY

Čím tmavší odstín, tím nižší funkční hodonty.

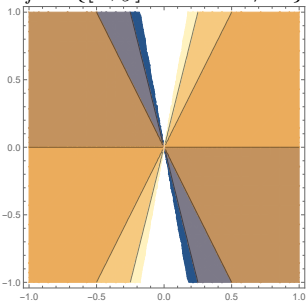
1. $D_f = \mathbb{R}^2$



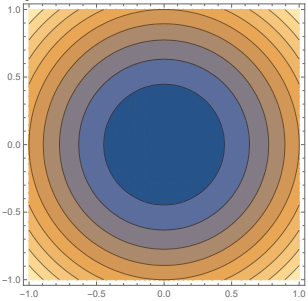
2. $D_f = \{[x,y] \in \mathbb{R}^2 : y \geq 0\}$



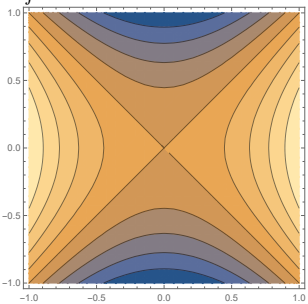
3. $D_f = \{[x, y] \in \mathbb{R}^2 : x \neq 0\}$



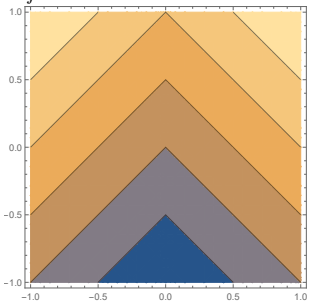
4. $D_f = \mathbb{R}^2$



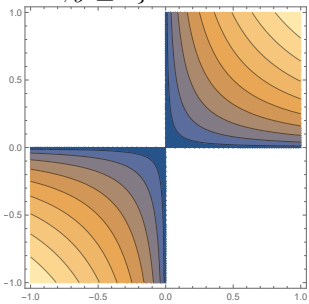
5. $D_f = \mathbb{R}^2$



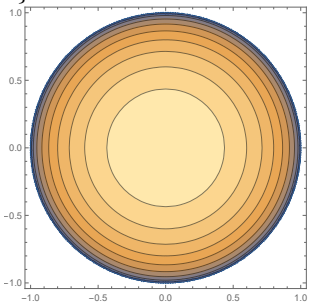
6. $D_f = \mathbb{R}^2$



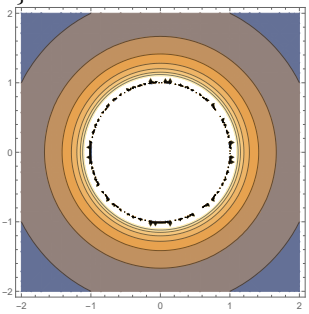
7. $D_f = \{[x, y] \in \mathbb{R}^2 : x, y \geq 0 \vee x, y \leq 0\}$



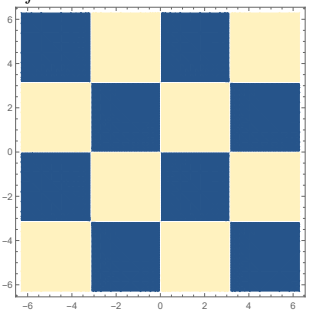
8. $D_f = \{[x, y] \in \mathbb{R}^2 : x^2 + y^2 \geq 1\}$



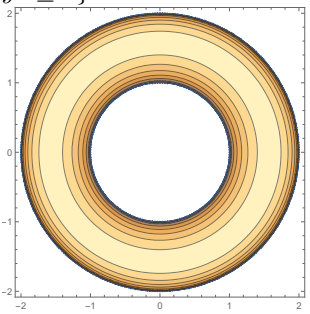
9. $D_f = \{[x,y] \in \mathbb{R}^2 : x^2 + y^2 < 1\}$



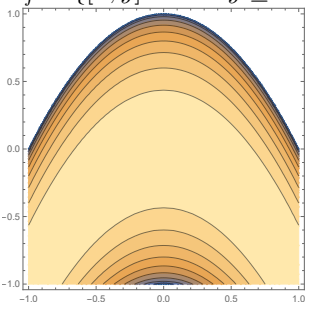
10. $D_f = \mathbb{R}^2$



11. $D_f = \{[x,y] \in \mathbb{R}^2 : 1 \leq x^2 + y^2 \leq 2\}$



12. $D_f = \{[x,y] \in \mathbb{R}^2 : y \leq 1 - x^2\}$



13. $D_f = \{[x,y] \in \mathbb{R}^2 : 2k\pi \leq x^2 + y^2 \leq (2k+1)\pi, k \in \mathbb{N}_0\}$