

## MATEMATIKA II

Rješenja zadataka za vježbu za I kolokvij -funkcije dviju varijabli

1.  $\mathcal{D}_f = \{(x, y) \in \mathcal{R}^2; y < x \text{ i } x \in [-1, 1]\}$
2.  $\mathcal{D}_f = \{(x, y) \in \mathcal{R}^2; x^2 + y^2 < 4 \text{ i } xy \geq 0\}$
3.  $\mathcal{D}_f = \{(x, y) \in \mathcal{R}^2; x < 1 \text{ i } y^2 \leq 4x\}$
4.  $\mathcal{D}_f = \{(x, y) \in \mathcal{R}^2; x^2 + (y - 1)^2 \neq 1\}$ .
5.  $\mathcal{D}_f = \{(x, y) \in \mathcal{R}^2; y \leq 2x + 1 \text{ i } y \geq 2x - 1\}$
6.  $2x - 2y - 4z + \pi = 0$
7.  $6x - 4y + z - 17 = 0$ .
8.  $2y - 3z - 6 = 0$ .
9.  $\frac{\partial f}{\partial x} = \frac{1}{x} - \frac{1}{(y-x)\ln(y-x)}$  i  $\frac{\partial f}{\partial y} = \frac{1}{(y-x)\ln(y-x)}$
10.  $\frac{\partial^2 f}{\partial x \partial y} = \frac{8xy(x^2 - y^2)}{(1 - (x^2 - y^2)^2)}$ .
11.  $\frac{\partial^2 f}{\partial x \partial y} = 12x^2y \cos 2(x^3 - y^2)$ .
12.  $\frac{\partial^2 f}{\partial x \partial y}(11, 1) = -\frac{7}{54}$
13.  $\frac{\partial^2 f}{\partial x \partial y}(2, 1) = -\frac{10}{9}$
14.  $y \frac{\partial f}{\partial x} - x \frac{\partial f}{\partial y} = 0$ .
15.  $y \frac{\partial f}{\partial x} + x \frac{\partial f}{\partial y} = x$ .
16.  $\frac{1}{y} \frac{\partial f}{\partial x} + \frac{1}{x} \frac{\partial f}{\partial y} = \frac{1}{y}$ .
17.  $x \frac{\partial f}{\partial x} + y \frac{\partial f}{\partial y} = 2xy \Phi\left(\frac{y}{x}\right)$ .
18. Funkcija ima lokalni minimum u  $T(1, 0)$ ,  $f(1, 0) = 0$ .
19. Funkcija ima lokalni maksimum u  $T(1, -2)$ ,  $f(1, -2) = 4$ .

20. Funkcija ima lokalni minimum u  $T(1, 0)$ ,  $f(1, 0) = -1$ .

21. Funkcija ima lokalni minimum u  $T(\frac{1}{2}, -\frac{5}{4})$ ,  $f(\frac{1}{2}, -\frac{5}{4}) = -e^{-\frac{3}{4}}$ .