

Domáce zadanie

Funkcia viac premenných

Dotyková rovina a normála ku grafu funkcie dvoch premenných

Napište rovnice dotykovej roviny a normály ku grafu funkcie $z = f(x, y)$ v danom dotykovom bode.

1. $z = x^2 + 2y^2$ v bode $[1, 1, 3]$

$$[2x + 4y - z - 3 = 0, x = 1 + 2t, y = 1 + 4t, z = 3 - t, t \in R]$$

2. $z = \sqrt{14 - x^2 - y^2}$ v bode $[3, 1, 2]$

$$[3x + y + 2z - 14 = 0, x = 3 + 3t, y = 1 + t, z = 2 + 2t, t \in R]$$

3. $x^2z + y^2z = 4$ v bode $[-2, 0, 1]$

$$[x - z + 3 = 0, x = -2 + t, y = 0, z = 1 - t, t \in R]$$

4. $\frac{x^2}{27} + \frac{y^2}{12} + \frac{z^2}{3} = 1$ v bode $[3, -2, -1]$

$$[2x - 3y - 6z - 18 = 0, x = 3 + 2t, y = -2 - 3t, z = -1 - 6t, t \in R]$$

5. $z - y - \ln \frac{x}{z} = 0$ v bode $[1, 1, 1]$

$$[x + y - 2z = 0, x = 1 - t, y = 1 - t, z = 1 + 2t, t \in R]$$