

#### 4. cvičení

Určete rovnici tečné roviny ke grafu funkce  $F$  v bodě  $[x_0, y_0, F(x_0, y_0)]$ :

- 1**  $F(x, y) = x^2y + 2x - 5y, x_0 = 1, y_0 = 3$
- 2**  $F(x, y) = e^{xy}, x_0 = -1, y_0 = 0$
- 3**  $F(x, y) = \ln(x - y) + x, x_0 = 3, y_0 = 2$
- 4**  $F(x, y) = \cos\left(\frac{x}{y-1}\right), x_0 = \pi, y_0 = 3$
- 5**  $F(x, y) = \sqrt{x-y}, x_0 = 3, y_0 = -1$
- 6**  $F(x, y) = \operatorname{arctg}(xy^2), x_0 = 0, y_0 = 2$
- 7**  $F(x, y) = \frac{xy}{x-2y}, x_0 = 3, y_0 = 1$
- 8**  $F(x, y) = \frac{x}{\sqrt{x^2+y^2}}, x_0 = 0, y_0 = 1$
- 9**  $F(x, y) = \frac{x}{\sqrt{x^2+y^2}}, x_0 = 4, y_0 = 0$
- 10**  $F(x, y) = e^{2y} \cdot \cos x, x_0 = \pi, y_0 = 1$
- 11**  $F(x, y) = \ln(x \cdot \ln(x+y)), x_0 = e, y_0 = 0$
- 12**  $F(x, y) = x^y, x_0 = e, y_0 = 3$
- 13**  $F(x, y) = y^x, x_0 = 2, y_0 = 1$
- 14**  $F(x, y) = \sin\left(\frac{x+y}{x-y} \cdot \pi\right), x_0 = 2, y_0 = 1$

Výsledky: **1**  $z = 8x - 4y - 6$ ; **2**  $z = 1 - y$ ; **3**  $z = 2x - y - 1$ ; **4**  $z = -\frac{1}{2}x + \frac{\pi}{4}y - \frac{\pi}{4}$ ;  
**5**  $z = \frac{x-y+4}{4}$ ; **6**  $z = 4x$ ; **7**  $z = -2x + 9y$ ; **8**  $z = x$ ; **9**  $z = 1$ ; **10**  $z = -2e^2y + e^2$ ;  
**11**  $z = \frac{2}{e}x + \frac{1}{e}y - 1$ ; **12**  $z = 3e^2x + e^3y - 5e^3$ ; **13**  $z = 2y - 1$ ; **14**  $z = 2\pi x - 4\pi y$ .