Да се намерят частните производни $f'_x(x,y)$ и $f'_y(x,y)$ на следните функции:

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

(2) $f(x,y) = xe^y + \ln xy$;

(3) $f(x,y) = \sin\dfrac{x}{6} + \cos\dfrac{y}{3}$;

(4) $f(x,y) = \ln\dfrac{x}{y}$;

(5) $f(x,y) = e^{-(2x^2+4y^2)}$;

(6) $f(x,y) = \dfrac{1}{\arctan\frac{y}{x}}$;

(7) $f(x,y) = \left(\dfrac{1}{3}\right)^{\frac{y}{x}}$;

(8) $f(x,y) = \ln(x + \ln y)$;

(9) $f(x,y) = \arctan\dfrac{x}{y}$;

(10) $f(x,y) = \ln\tan\dfrac{y}{x}$.

Отговори:

(1) $f'_x(x,y) = \sqrt{y} + 2x$, $f'_y(x,y) = \dfrac{x}{2\sqrt{y}}$;

(2) $f'_x(x,y) = e^y + \frac{1}{x}$, $f'_y(x,y) = xe^y + \frac{1}{y}$;

(3) $f'_x(x,y) = e^y + \frac{1}{x}$, $f'_y(x,y) = -\frac{1}{3}\sin\left(\frac{1}{3y}\right)$;

(4) $f'_x(x,y) = \frac{1}{x}$, $f'_y(x,y) = -\frac{1}{y}$;

(5) $f'_x(x,y) = -4xe^{-(2x^2+4y^2)}$, $f'_y(x,y) = -8ye^{-(2x^2+4y^2)}$;

(6) $f'_x(x,y) = \dfrac{y}{(x^2+y^2)\arctan^2\frac{y}{x}}$, $f'_y(x,y) = -\dfrac{x}{(x^2+y^2)\arctan^2\frac{y}{x}}$;

(7) $f'_x(x,y) = \dfrac{3^{-\frac{y}{x}}y\ln 3}{x^2}$, $f'_y(x,y) = -\dfrac{3^{-\frac{y}{x}}\ln 3}{x}$;

(8) $f'_x(x,y) = \dfrac{1}{x+\ln y}$, $f'_y(x,y) = \dfrac{1}{y(x+\ln y)}$;