

Quiz 6

Calculate $\frac{\partial f}{\partial x}$ and $\frac{\partial f}{\partial y}$ when...

$$\textcircled{1} f(x,y) = x^5 y^3 + x^4 y^2 + xy^8$$

$$\text{Soln: } \frac{\partial f}{\partial x} = 5x^4 y^3 + 4x^3 y^2 + y^8$$

$$\frac{\partial f}{\partial y} = 3x^5 y^2 + 2x^4 y + 8xy^7$$

$$\textcircled{2} f(x,y) = (x^2 + y^2) e^{xy}$$

$$\text{Soln: } \frac{\partial f}{\partial x} = 2x e^{xy} + y(x^2 + y^2) e^{xy}$$

$$\frac{\partial f}{\partial y} = 2y e^{xy} + x(x^2 + y^2) e^{xy}$$

$$\textcircled{3} f(x,y) = \ln(e^x + e^y)$$

$$\text{Soln: } \frac{\partial f}{\partial x} = \frac{1}{e^x + e^y} (e^x) = \frac{e^x}{e^x + e^y}$$

$$\frac{\partial f}{\partial y} = \frac{1}{e^x + e^y} (e^y) = \frac{e^y}{e^x + e^y}$$