

Q₁ Find $\frac{\partial w}{\partial x}$, $\frac{\partial w}{\partial y}$ if 1. $w = f(x, y) = \tan^2 \cos xy$

2. $f(x, y) = \frac{2xy}{\sqrt{y + \tan x}}$

3. $f(x, y) = x^3 - 8xy^4 + 12$ at $(1, 1)$.

4. $w = e^{xy} \sin(y+x)$

5. $w = \sin^{-1}\left(\frac{y}{x}\right)$

6. $w = \cot^2(x+5y+10)$.

7. $w = \ln y e^{\sqrt{xy}}$

Q₂ Find $\frac{\partial f}{\partial x}$, $\frac{\partial f}{\partial y}$, $\frac{\partial f}{\partial z}$ of the following function.

1. $f(x, y, z) = 5xy^2 + 2z^2y + xy + xz^2$.

2. $f(x, y, z) = \csc^{-1}(x^2y^2 + z)$.

3. $f(x, y, z) = \ln(xyz) \cdot xz^2 + \frac{y}{\sec x + z}$.

Q₃ Using the definition of partial derivative to find

$\frac{\partial w}{\partial x}$, $\frac{\partial w}{\partial y}$ if 1. $w = f(x, y) = 5xy$

2. $f(x, y) = x^2 + xy$.