

Q. No. 7.

$$Q1. z = \ln(x^2 + y^3)$$

$$\frac{\partial z}{\partial x} = \frac{1}{x^2 + y^3} \cdot 2x$$

$$\frac{\partial z}{\partial y} = \frac{1}{x^2 + y^3} \cdot 3y^2$$

$$Q2. z = x^2 + y^2 + 2 \quad (1, 1, 4)$$

$$f_x = \frac{\partial}{\partial x} = 2x$$

$$f_y = \frac{\partial}{\partial y} = 2y$$

$$f_x(1, 1) = 2$$

$$f_y(1, 1) = 2$$

$$z - 4 = 2(x - 1) + 2(y - 1)$$

