

Quiz for lecture 7.

Name: Jiahe Li.

Section: 8:40 - 10:00 A.M.

1. Compute the partial derivatives with respect to x and y .

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

$$f_x(x, y) = \frac{\frac{\partial}{\partial x}(x^2 + y^3)}{x^2 + y^3} = \frac{2x}{x^2 + y^3}$$

$$f_y(x, y) = \frac{\frac{\partial}{\partial y}(x^2 + y^3)}{x^2 + y^3} = \frac{3y^2}{x^2 + y^3}$$

2. Find an equation of tangent plane to the given surface at the specified point.

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

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

$$f_x(x, y) = 2x.$$

$$f_y(x, y) = 2y$$

$$\therefore f_x(1, 1) = f_y(1, 1) = 2$$

\therefore the equation of the plane is

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

$$\text{or } z = 2x + 2y$$

