

attendance quiz for Lecture 7

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section 22  
4.10.2020

1. compute the partial derivative with respect to x and y.

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

$$\frac{dz}{dx} = \frac{2x}{x^2 + y^2}$$

$$\frac{dz}{dy} = \frac{2y}{x^2 + y^2}$$

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

$$z = x^2 + y^2 + z$$

step 1:  $4 = 1^2 + 1^2 + z$  (V)

$$\frac{dz}{dx} = 2x = 2 \cdot 1 = 2$$

$$\frac{dz}{dy} = 2y = 2 \cdot 1 = 2$$

step 2:

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

$$z = zx - z + zy - z + z$$

$$\boxed{z = zx + zy}$$