Key

Quiz 5   Math2311   Fall 2018/2019

Name..BZU#...Section#.........

1. Find the slope of the tangent line to the curve of intersection of $f(x,y) = x^2 + y^2$ and $y = 2$ at the point $(-1, 2, 5)$

$$\frac{\partial f}{\partial x} = 2x \implies \frac{\partial f}{\partial x}\Big|_{(-1,2)} = 2(-1) = -2$$

$(-1, 3, 5)$
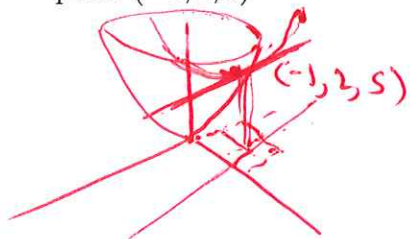
2. Circle the correct answer. If $yx - z^2 = 3\ln(xz)$ then $\frac{\partial y}{\partial x}\Big|_{(1,1,1)} =$

(a) 0

(b) 1

(c) $\frac{1}{5}$

(d) -1

(e) $\frac{-1}{5}$

(f) 2

(g) $\frac{2}{5}$

(h) -2

(i) $\frac{-2}{5}$

(j) None of the above

$$F(x,y,z) = yx - z^2 - 3\ln(xz) = 0$$

$$\frac{\partial y}{\partial x} = -\frac{F_x}{F_y} = \frac{-\left(y - 0 - 3\frac{z}{xz}\right)}{x - 0 - 0}$$

$$\frac{\partial y}{\partial x}\Big|_{(1,1,1)} = \frac{-(1-3)}{1} = 2$$