

KFUPM Term(112) Name _____ Serial # _____

MATH 201 Quiz # 3(a) ID # _____ Section # 06

Time: 20 Minutes

Marks: /8

1. Find a unit vector in the direction of which $f(x, y, z) = 4e^{xy} \sin z$ decreases most rapidly at $(1, 0, \pi / 4)$.

2. For $z = f(x^2 + y^2)$, use chain rule to calculate $y \frac{\partial z}{\partial x} - x \frac{\partial z}{\partial y}$

KFUPM Term(112) Name _____ Serial # _____

MATH 201 Quiz # 3(b) ID # _____ Section # 06

Time: 20 Minutes

Marks: /8

1. Find the directional derivative of $f(x, y) = x^2 + \sin(xy)$ at the point $(1,0)$ in the direction of $\left\langle \frac{4}{5}, -\frac{3}{5} \right\rangle$.

2. For $y = w \tan^{-1}(uv)$, $u = r + s$, $v = s + t$, $w = r + t$, find $\frac{\partial y}{\partial t}$ when $r = 1$, $s = 0$ and $t = 0$.