KFUPM Term (142) Name_____Serial#_____

MATH 201 Quiz # 3(a) ID#_____ Section 9

Time: 20 Minutes Marks : /8

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1) Let $f(x,y)=\begin{cases}\frac{\sin(x^3+y^4)}{x^2+y^2} & (x,y)\neq(0,0)\\ 0 & (x,y)=(0,0)\end{cases}$

Find $f_y(0,0)$.

2) Let $z=\ln q$ where $q=\sqrt{v+3}\tan^{-1}u$. Find $\frac{\partial z}{\partial v}\Big|_{\substack{u=1\\ v=-2}}$.

3) Find slope of the surface $f(x,y,z)=\tan^{-1}\left(\frac{1}{xy^2z^3}\right)$ at the point $(1,1,1)$ in the $z$-direction.

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MATH 201 Quiz # 3(b) ID#_____ Section 9

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1) Find $\lim_{(x,y)\to(1,-1)} \frac{xy+2}{x^2-y^2}$

2) Check whether or not $f(x,y) = \frac{4x^3y}{2x^4+3y^4}$ is differentiable at $(0,0)$.

3) Let $z = \tan^{-1}\left(\frac{u}{v}\right)$ where $u(x,y) = 2x + y, v(x,y) = 3x - y$. Find $\frac{\partial z}{\partial y}$.