Sultan Qaboos University
Department of Mathematics and Statistics

Calculus III Fall 2014

Quiz 3 25 minutes

Name:. . . . . Section: . . . . . ID Number:. . . . . .

Q1: Evaluate the indicated limit, or show that it does not exist. *(2 points each)*

$$(i)\ \lim_{(x,y)\to(2,1)} \frac{x^2-4y^2}{2y-x} \qquad (ii)\ \lim_{(x,y)\to(0,0)} \frac{3y^2}{x^2+y^2}.$$

Q2: Find the domain of the function *(3 points)*

$$f(x,y,z) = \frac{x^2+2xy-z}{x+y-z}.$$

⇛ Please Continue

Q3: Use linear approximation to approximate the function *(3 points each)*

$$f(x,y) = \sin(x+y) \quad \text{at the point} \quad (\frac{\pi}{6}, \frac{\pi}{12}).$$

Q4: Show that if $f(x,y) = \sin(3\pi x)\cos(6\pi y)$, then *(5 points)*

$$4\frac{\partial^2 f}{\partial x^2} - \frac{\partial^2 f}{\partial y^2} = 0.$$

End of Quiz Best Wishes