QUIZ 3

(Math 200-Section B)

1. Find the limits: (a) $\lim_{(x,y)\to(1,0)} \frac{x\sin y}{x^2+1}$ (b) $\lim_{(x,y)\to(2,-4)} \frac{y+4}{x^2y-xy+4x^2-4x}$ (4 pts)

2. Check whether the function $f(x,y)=\frac{1}{x^2-y}$ is continuous at (-1,1). Can you describe all points of discontinuity of f? (4 pts)

3. By considering different paths of approach, show that the function $f(x,y)=\dfrac{x^2-y^2}{x^2+y^2}$ has no limit as $(x,y)\to(0,0)$. (4 pts)

4. Find the partial derivatives $\dfrac{\partial f}{\partial x}$ and $\dfrac{\partial f}{\partial y}$ of the function $f(x,y)=e^{2y}\cos(x-y)$.

(4 pts)

5. Find the value of $\dfrac{\partial z}{\partial x}$ at (1,1,1) if the equation $xy+z^3x-2yz=0$ defines z as a function of the two independent variables x and y, and the partial derivatives exist.

(4 pts)