King Fahd University of Petroleum and Minerals

MATH 201 QUIZ #3 Term 152 *Dr. A. Khalfallah*

Name:	section:	ID:

Q1. Find the derivative of $f(x,y,z)=\sqrt{\frac{xy}{z}}$ at $P(-3,-3,4)$ in the direction of $\vec{u}=<3,1,-4>$

Q2. Let $2^{xz}+\tan^{-1}(y+z)=2$. Find $\frac{\partial z}{\partial x}+\frac{\partial z}{\partial y}$ at $(1,-1,1)$

Q3. If $z = \tan^{-1}\left(\frac{u^2}{v}\right)$ where $u = x + y$ and $v = 2x - y$, then find $\left.\frac{\partial z}{\partial x}\right]_{(x,y)=(2,2)}$

Q4. Find the direction in which the function $f(x, y, z) = \ln\left(x^2 + y^2 - 1\right) - 2y + 2xe^z$ increases most rapidly at the point $P(1,1,0)$