KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS
DEPARTMENT OF MATHEMATICS AND STATISTICS
MATH 201 - QUIZ 3

Name:
Student ID #:

Question 1. Find $a + b$ so that the function

$$f(x,y) = \begin{cases} \dfrac{2\cos(x^2+y^2) - a}{x^2+y^2} & (x,y) \neq (0,0) \\ b & (x,y) = (0,0) \end{cases}$$

is continuous at the origin.

Question 2. Let $y = f(x)$ be single variable function twice differentiable. If $\dfrac{df}{dx} = \dfrac{1}{\sqrt{x}}$ and $x(s,t) = st$. Find $\dfrac{\partial^2 f}{\partial s \partial t}$ at $s = 1$ and $t = 2$.

Question 3. Find a direction of zero change in $f(x,y) = \tan^{-1}(\dfrac{x}{y})$ at $(-1,1)$.

Your Solution.