King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math 101 (132) - Quiz III

Name: ID: Serial No.:

1. If the function $f(x) = \begin{cases} ax + b, & x > -1 \\ bx^2 - 1, & x \le -1 \end{cases}$ is differentiable everywhere then find a and b.

2. If $f(x) = \sin(\sin^2 x)$, then find $f'(x)$.

3. If $y = \dfrac{2x - 1}{3x + 1}$, then find y'''

4. If $f(x) = xe^x$ and n is positive integer, then find $f^{(n)}(1)$.

5. If $y = \sin(x^2)$ and $x = \cos t$, then find $\dfrac{dy}{dt}$

6. Find $\lim\limits_{x \to -1} \dfrac{x^{2/9} - 1}{x + 1}$