King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math 101 (142) Sec 10 - Quiz 5

Name: ID: Serial No.:

1. Find a constant c that satisfies the conclusion of the mean value theorem when applied to $f(x) = \ln x$ on $[1, e]$

2. Suppose that f is differentiable on $\mathbb{R}$ and satisfies $1 \leq f'(x) \leq 3$ for all values of x. Then find a and b, where $a \leq f(7) - f(5) \leq b$

3. Find the critical point(s) of $f(x) = \dfrac{x^2+1}{\sqrt{2x+1}}$

4. Find the absolute maximim and minimum of $f(x) = 2\cos x + 2\cos^2 x, \quad \frac{\pi}{2} \leq x \leq 2\pi$

5. If the function $f(x) = axe^{bx^2}$ has the maximum value $f(2) = 1$ where a and b are real numbers, then find a and b