King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math 101 (142) Sec 15 - Quiz 6

Name: ID: Serial No.:

1. If Newton's Method is used to estimate the x-coordinate of the point of intersection of the curves $y = \tan(x + \frac{\pi}{4})$ and $y = \ln(3x + 1)$ with $x_0 = 0$, then find the value of x_1.

2. Evaluate $\lim_{x\to\infty} (1 + 4x)^{\frac{1}{4\ln x}}$

3. Evaluate $\int \frac{1}{x}\left(\frac{3}{x}+\frac{x}{3}\right)^2 dx$

4. The sum of two nonnegative numbers is 30. If p is the product of one of the numbers and the square root of the other. Then find the largest possible value of p.

5. Discuss the concavity and find the inflection point(s) of $f(x) = \dfrac{e^{2x}}{e^{2x}+1}$

6. Find $\lim\limits_{x\to 0} \dfrac{\sin 4x - 4x - x^2}{1-\cos 2x}$