King Fahd University of Petroleum & Minerals
Department of Math and Stat
Math 132 Semester 141 - Exam 1

Name_____ ID No._____

Points: Q1=2,Q2=3,Q3=2,Q4=4,Q5=2,Q6=2,Q7=2,Q8=1,Q9=2,Q10=3,Q11=2

1) Find the following limit. If it is $+\infty$ or $-\infty$ or does not exist, then say so.

$$\lim_{x\to 1^+} \frac{x-1}{x^2-2x+1}$$

2)

$$f(x)=\begin{cases} 2-x^2 & \text{if } x>1 \\ -2+3x & \text{if } 0\le x\le 1 \\ 4-x^2 & \text{if } x<0 \end{cases}$$

Find

(a) $\lim_{x\to 1^+} f(x) =$

(b) $\lim_{x\to 1^-} f(x) =$

(c) $\lim_{x\to 0^-} f(x) =$

(d) $\lim_{x\to \infty} f(x) =$

(e) $\lim_{x\to -\infty} f(x) =$

3) If $y=\sqrt[3]{x^2+3x+8}$, then find the rate of change of y with respect to x when x=0.

4)

Let $f(x) = \begin{cases} \frac{1}{3+x} & \text{if } x \geq 0 \\ \frac{2}{5+x} & \text{if } x < 0 \end{cases}$

Find all points where this function $f(x)$ is not continuous.

5) By direct use of the definition of a derivative, find $\frac{d}{dx}[f(x)]$ if $f(x) = \frac{1}{x+6}$.

6) Find all values of x for which the curve $y = 6x^2 + 4x - 5$ has slope 2.

7) If $y = \dfrac{x^2 + 1}{x + \ln x}$, then find $y'(1)$.

8)

Differenciate: $f(x) = e^{\frac{-2}{x^2}}$

9) Find y' if $\ln(xy) + y = 2$.

10) Use logarithmic differentiation to find $\frac{dy}{dx}$ from $y = (x^2 + x + 3)^{x^2 - 1}$.

11) If $y = (2x + 1)^{11}$, then find $y''(0)$.