King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics

Math 101 (Term 162) - Quiz 3

Student Name_____ **Student ID:** _____

Exercise 1 **[5 points]**

Let $f(x) = |x-1| + |x+2| = \begin{cases} -2x-1 & ; \quad x \le -2 \\ 3 & ; \quad -2 < x < 1. \\ 2x+1 & ; \quad x \ge 1 \end{cases}$ Find $f'(x)$ =

Exercise 2 **[3 points]**

Find

(a) $\lim_{x\to 0} \frac{\sin 2x \sin 5x}{x^2}$ =

(b) $\lim_{x\to 0} \frac{(\sin 2x)^3}{x^3}$ =

(c) $\lim_{x\to \infty} x sin \frac{1}{x}$ =

Exercise 3 **[2 points]**

Differentiate $y = (x+1)^{x+1}$