Student Name:_____ Student Number: _____ Serial No.:_____

Instructor: M. Z. Abu-Sbeih Math - 132.1 Quiz No. 1 Date: 16-2-2015.

Problem 1: (10 points) Find the limit if it exists. If it does not exist, show why. Use the symbols ∞ *or* $-\infty$ as appropriate.

(i) $\lim\limits_{x \to 3^+} \dfrac{x^2 + x - 12}{\sqrt{x - 3}}$

(ii) $\lim\limits_{x \to \infty} \sqrt{x^2 + x} - x$

Problem 2: (5 points) Find all values of C which will make the following function continuous.

$$f(x) = \begin{cases} Ax - x^2 & if \ \ x \le 1, \\ 2x + 3 & if \ \ x > 1. \end{cases}$$

Problem 3: (5 points) Use the definition of the derivative to find $f'(2)$ for the function $f(x) = x^2 - x$.

Problem 4: (15 points) Find $f'(x)$ for each function:

(a) $f(x) = (2x+1)(x^2 - x^3)$

(b) $f(x) = \dfrac{2x+1}{x^2 - x^3}$

(c) $f(x) = (x^2 - x)^5$

Problem 5: (5 points) Find the **equation of the tangent** line to the curve $y = \dfrac{4}{\sqrt{9x^2+1}}$ at $x = 1$.