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

Instructor: M. Z. Abu-Sbeih Math 101- Q1 Date: 14-9-2014

Problem 1: (10 points) Find the slope of the curve $y = x^2 - x$ at the point P(1,0). Write the equation of the tangent line to the curve at the point P.

Problem 2: (10 points) Use the precise definition of the limit to show that

$$\lim_{x \to 2} (1 - 2x) = -3.$$

Problem 3: (14 points) Find the limit if it exists **[SOLVE ONLY TWO PARTS]**

a) $\lim_{x \to 0} \dfrac{x}{\sqrt{x+1} - 1}$

b) $\lim_{x \to 1} (1-\sqrt{x}) \sin \frac{3}{x-1}$

c) $\lim_{x \to 0} \frac{\cos 2x - 1}{\sin x}$

Problem 4: (6 points) If $\lim_{x \to 1} \frac{g(x) - 3x + 1}{x - 1} = 7$, find $\lim_{x \to 1} g(x)$. Justify your answer.