

Serial No.: _____ Student Name: _____ Student Number: _____
Instructor: M. Z. Abu-Sbeih Math 101- Q1 Date: 15-6-2015

SHOW ALL YOUR WORK. NO CREDITS FOR ANSWERES WITHOUT JUSTIFICATIONS

Problem 3: (20 points) Find the limit if it exists

a) $\lim_{x \rightarrow -2} \frac{x^2 - x - 6}{x^2 - 4}$

b) $\lim_{x \rightarrow 4} \frac{x - 4}{\sqrt{x} - 2}$

c) $\lim_{x \rightarrow 1} (x - 1)^2 \cos \frac{1}{x - 1}$

d) $\lim_{x \rightarrow 0} \frac{\sin 2x}{\tan x}$

Problem 2: (7 points) Find the slope of the curve $y = x^2$ at the point P(2,4). Write the equation of the tangent line to the curve at the point P.

Problem 3: (8 points) Use the $\epsilon - \delta$ definition of the limit to show that

$$\lim_{x \rightarrow 1} (7 - 5x) = 2.$$

Problem 4: (5 points) If $\lim_{x \rightarrow 2} \frac{g(x) - 5}{x - 2} = 3$, find $\lim_{x \rightarrow 2} g(x)$. Justify your answer.