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

Instructor: M. Z. Abu-Sbeih Math 101- Q4 Date: 1- 4 - 2018

SHOW ALL YOUR WORK. NO CREDITS FOR ANSWERES WITHOUT JUSTIFICATIONS

Show all your work. NO credits for answers not supported by work.

(1) (8 Points) If $y = \sqrt[3]{\frac{(x-1)^2}{x^4+1}}$, find y' $at\ the\ point\ (0,1)$.

(2) (12 Points) The position of a function is given by the equation $S = f(t) = t^3 - \frac{9}{2}t^2 + 6t$.

a) Find the distance traveled by the particle during the first 2 seconds.

b) When the particle is speeding up? and when is it speeding down?

(3) (8 Points) If $y = (1 + 3x)^{\cos x}$, find y' $at\ the\ point\ (0,1)$.

(4) (12 Points) Two cars start from the same point. One travels east at a speed of 80 km/hour and the other is traveling north at a speed of 60 km/hour. How fast the distance between the two cars is changing after 30 minutes?