Due Wednesday, September 25th Problem Set # 4

Math-215 Fall 2017

Please box your answers for each of the exercises below. Also, be mindful of your presentation, I will deduct 10 points for disorganized or unintelligible answers.

Exercises 96/100 (12 points each)

1) Section 10.5, problems: # 21 - 23.
2) Section 10.5, problems: # 25 and 26.
3) Section 10.5, problems: # 30 and 31.
4) Section 10.5, problems: # 32.
5) Section 10.5, problems: # 35 - 38.
6) Section 10.6, problems: # 21 - 23.
7) Section 10.6, problems: # 24 - 26.
8) Section 10.6, problems: # 27 and 28.

More difficult problems 4/100 (2 points each). *Please submit these on a separate sheet*.

9) Section 10.5, problems: # 40.
10) In this exercise, we will explore the geometrical object determined by the parametric equations

$$\begin{cases} x = 2s + 3t \\ y = 3s + 2t \\ z = s + t. \end{cases}$$

Given that there are two parameters, what dimension do you expect the object to have? Given that the individual parametric equations are linear, what do you expect the object to be? Show that the points $(0, 0, 0)$, $(2, 3, 1)$, and $(3, 2, 1)$ are on the object. Find an equation of the plane containing these three points. Substitute in the equations for x, y, and z and show that the object lies in the plane. Argue that the object is, in fact, the entire plane.[1]

[1] Borrowed from *Multivariable Calculus: Early Transcendental Functions* 3rd Edition by Robert T. Smith & Roland B. Minton.