CLS Homework #5 Notes and Common Errors

Homework Due: 22 February 2019

Problems Graded: 2.6.7, 2.6.14, and 3.1.8

- General Notes -

1. This homework went pretty well; good job! Please do take the time to look through your homework and take stock of the notes that I left you on your individual homeworks (even if you got 20/20).

- Problem 2.6.7 -

1. This problem asked you to find the microscope equation for $f(x) = \tan(x)$ and to use it to estimate $\tan(0.007),\ \tan(0.3)$, and $\tan(-0.02)$. In order for the answers to work out correctly, your calculator needed to be in **radian** mode. From now on, it would be best to assume that all the angles that we are working with will be in radians, and if they are not then we will make sure to be explicitly clear.

- Problem 2.6.14 -

1. This question was very similar to Example 2.6.4 **except** instead of using the quotient rule to find $k'(t)$ where $k(t) = f(t)g(t)$, you needed to use the product rule.

- Problem 3.1.8 -

1. Example 3.1.3 in the text worked out this exact problem just with the amount of irradiation $I(x)$ switched for the amount sugar $S(t)$.
2. For part (c) there seems to have been a little confusion about how you needed to justify that $I(x) = I_0e^{-kx}$ was a solution to the differential equation $I'(x) = -kI(x)$. There were a couple of ways that you could have done this. Firstly, you could have just referenced the point in the text where the actual formulation took place on page 126. Alternatively, you could have taken the derivative of $I(x) = I_0e^{-kx}$ and shown that it gave $I'(x) = -kI(x)$ which was the the desired differential equation from part (a). I didn't take off points this time, but this would be something that would be completely fair to ask on an exam. If you have further questions, please feel free to either shoot me an email, or come to my Marc or office hours.