Reading Assignment for Section 2.7

MATH 130: Calculus I, Section 4
Spring Semester 2017

Follow the general guidelines for the Reading Assignment (the salmon colored handout). Be sure to include and label all four standard parts 1,2,3,4 of the Reading Assignment in what you hand in. Be sure to **staple** together pages if you have more than one, and include your **name** at the top of the page. Neatness is appreciated!!!

Due: at the beginning of class on Wednesday, February 1st

Read:

Section 2.7, pages 112-117 (Note that this is NOT the entire section; read to the end of Example 4.)

Notes:

This is very theoretical and challenging material for some. Don't let the Greek letters scare you, they are cool and just represent unknown constants. Remember the hand-wavy definition of a limit that we gave in class on Monday? We want to make that more exact, and that is what is happening in this section. Feel free to review your definitions of absolute values on your green prerequisites sheet if you feel absolute values are causing you confusion here.

Remember that your answers should include complete sentences for every question. Be sure to answer all parts of each question! There are fewer questions this time, so your response to each should be a bit longer.

Reading Questions for part (1), Response:

a) State the precise definition of $\lim_{x \to a} f(x) = L$. Compare this definition to the one we put on the board in class on Monday.

b) The precise definition includes the statement "$|f(x) - L| < \epsilon$ whenever $0 < |x - a| < \delta$". Write this as an if-then statement. In other words, you can say that we are given a statement that says "A whenever B". Is that the same as "if A, then B", or "if B, then A"? Be sure to write out the statement using the original phrases (i.e. not just A and B). Explain briefly.

c) Does the set $\{x : 0 < |x - a| < \delta\}$ include the point $x = a$? Explain.

d) Suppose that you find a value of δ such that $|f(x) - L| < \epsilon$ whenever $0 < |x - a| < \delta$. Are there other values that would work for δ besides the one you found? Why?

Remember parts 2-4 on the salmon handout!