Work each of these problems ***on this document*** and ***turn it in at 11:00 am on Tuesday, 19 January 2016.***

You should work this assignment in pencil so that you can erase and correct any errors (as opposed to scribbling out work). When writing your solutions, keep in mind the notational and formatting issues discussed and illustrated in lecture as well as the examples in the lab manual; your solution will be evaluated for your success at using correct notation, your success at showing all relevant supporting work, and your success at using appropriate organizational strategies as well as for your success at coming up with a "correct answer."

You are encouraged to work on these problems with your classmates. Please note, however, that copying somebody else's solutions shortly before turning in the assignment does not constitute "working together." What it constitutes is your getting credit for somebody else's work.

In general, if you are just copying someone else's answer you need to go to your instructor's office hours or the tutor center to get some help; if you understood, you wouldn't simply copy somebody else's answers.

Create a table similar to Tables 2.1.3 and 2.1.4 (in the lab manual) from which you can deduce the following limit value. Make sure that you include table numbers, table captions, and meaningful column headings. Make sure that your input values follow patterns similar to those used in Tables 2.1.3 and 2.1.4. Make sure that you round your output values in such a way that a clear and compelling pattern in the output is clearly demonstrated by your stated values. Finally, make sure you write your conclusion in a complete sentence using proper limit notation as we did in class the first day.

2.1 #19 $\displaystyle\lim_{x \to -1^+} \frac{\sin(x+1)}{3x+3}$

1.2.1 Exercises

Let $g(x) = x^2 - 5$.

1. Following Example 1.2.2, find a formula for the slope of the secant line connecting the points $(x_0, g(x_0))$ and $(x_1, g(x_1))$.

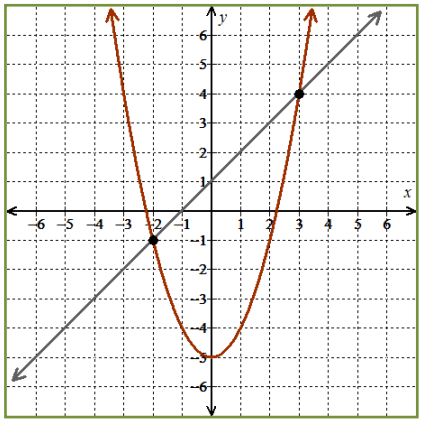

Figure 1.2.3: g

2. Check your slope formula using the two points indicated in Figure 1.2.3. That is, use the graph to find the slope between the two points and then use your formula to find the slope; make sure that the **two** values agree (that is, there should be **TWO** calculations)!

Completely simplify the difference quotient for the following function. Please note that the template for the difference quotient needs to be adapted to the function name and independent variable in the given equation. For example, the difference quotient for the function in Exercise 1 is $\frac{v(t+h)-v(t)}{h}$.

Please make sure that you lay out your work in a manner consistent with the way the work is shown in Example 1.3.1 (excluding the subscripts, of course).

1.3.1 #3 $w(x)=\frac{3}{x+2}$

2.2.1 Exercises

The value of each of the following limits can be established using one of the replacement laws. **Copy each limit expression**, state the value of the limit (e.g. $\lim_{x \to 9} 5 = 5$), and state the replacement law (by number) that establishes the value of the limit.

1. $\lim_{t \to \pi} t$

2. $\lim_{x \to 14} 23$

3. $\lim_{x \to 14} x$