CLS Homework #2 Notes and Common Errors

Homework Due: 25 January 2018
Problems Graded: 2, 5, and 9

- General Notes -

1. Please leave more space between your answers so I can write comments. If there is no space, I can't give you useful feedback.
2. There were several people that forgot to label the functions on their graphs. **Please remember to do this**; I didn't take off points this time since we are still getting in the swing of things, but I will next time.

- Problem 2 -

1. Most everyone did well on determining what was true and what was false, and the only real place that people lost points is if they didn't provide any sort of justification. For example on part (a), simply claiming $r(r(x)) = x$ was not sufficient. You either needed to show me algebra or provide a written explanation as to why this was the case.
2. I have a couple of quick notes on good practices in justifying statements. When proving something true, it is not sufficient to show that it is true in a couple of cases and then generalize from there. To see why this is, suppose that I wanted to determine if $x^2 = 7x - 12$. In doing this I might observe that if I take $x = 4$, I have that

   $$x^2 = 16 = 7(4) - 12.$$

   I could also take $x = 3$ and see that

   $$x^2 = 9 = 7(3) - 12.$$

   But if I were to choose $x = 0$ this equation will not hold. On the other hand, if we want to show that something is false, then it is sufficient to just provide a counterexample.

- Problem 5 -

1. There were no major notes for this problem. Basically if you graphed the right function for part (b) and labeled your axes correctly, you received full points.

- Problem 9 -

1. In part (a) what we wanted was the distance between the x-intercepts. In the case of $f(x) = cos(x)$, the first intercept appears at ~ 1.5 and the second intercept appears at ~ 4.6, so the distance would be ~ 3.1.
2. For part (g), a couple of people were confused on how to interpret "how wide is this pattern?" In this what we were really asking was "if you start at, say, the top of one of the bumps in the given graph, how long does it take you to get back to that same spot on top of a bump?" In other words, we were asking what the period of the graph was. In the case of the graph of $f(x)$ the period was $2\pi \approx 6.3$ and for $g(x)$ it was $\pi \approx 3.1$.