Math 166 Reflection, May 25

Reflecting back upon the content we covered today, I realized a lot was learned. The most significant in my opinion was the algebraic shortcuts to finding the slope of the tangent line. The power rule and simple elimination of constants, saves a lot of time when compared to the longhand method learned previously.

Using these new found “shortcuts” we applied them to two differentiation rules, both product and quotient, and discovered how to find derivatives that we were unable to find earlier. It is important to note that when using the Quotient Rule, you want to start with vu’ and subtract uv’, in that order. If you do it the opposite, you may end up with the right expression, but the wrong sign. When looking at the original functions being derived (u / v)’ , v is the denominator, which is on the bottom and must come first in the following equation. A trick that I came up with to help me remember, is that when entering a typical two story house, you start at the bottom floor. Now, everyone is different and will remember in their own way, so I challenge you to do the same.

Today we also learned the theory behind the product rule, which turns out to be somewhat intuitive. Towards the end of our discussion, we were given a stand out problem that I found to be quite thought provoking. The problem gave us the function of motion for a particle. We were asked to find the velocity, acceleration, and the answer to a final question that tied the two together. Finding the velocity of the particle ended up being just simply the use of the power rule to acquire the first derivative. The acceleration was then found by taking the second derivative of the function. In my physics class, we utilized a few formulas to find acceleration and velocity. I was intrigued that likewise, calculus had its own set.

The last aspect of today’s class that I would like to go back and discuss was the drawing of the graphs of derivative function when given a graph of an unknown function. This concept took me a long time to understand but once I got it, it was rather easy.

To start, I follow the same steps every time. First, I always locate where the slope of the function is equal to 0. Since the slope is equal to 0, the derivative value of the function is also 0. When graphing the derivative (not the original function), this “0” value corresponds with the Y-value, hence the X-intercepts (Y=0). After marking those X-intercepts on my graph, I look to see what sets of coordinates on the graph of the function have a positive slope. Those instances where the function’s slope is positive I make sure to graph in quadrants one and two (the upper 2/4ths of the coordinate plane). If the slope if the original function is positive (+) then the Y-value for the derivative’s graph will be positive (+) as well. Then, where the slopes of the given function goes from positive to zero (flat), I make sure the line on my graph is leaving the upper quadrants and crossing the X axis. When doing the negative values, I respectively do the same but use the lower two quadrants which are quadrants three and four (Negative slope of original function = negative Y-value for derivative’s graph). My advice as a student to you is practice and find your own method. Don’t jump to second guess yourself because the two graphs often look nothing alike or even are almost opposite at times.