Quiz Group 10 (C. Hash, K. Marino, K. Root, E. Rouse)
CS161 – Assignment #3/Quiz #6
July 10, 2012

## Q1: Write the pseudocode for the algorithm you are going to use to calculate the area using the rectangle method versus the trapezoid method. This should include things such as the formula you will use to perform the calculation, the type of loop you will use to calculate the area, the kind of loop are you going to use to ask the user if he/she wants to continue to find the area, etc. Discuss why certain types of selection statements and loops are preferred over other types for specific tasks, i.e. switch/case versus if/else and for loops versus while loops.

### Do: (While user keeps wanting to calculate integrals)

1) Prompt the user for the starting and ending points of the integration area.
   {reprompt if not an integer or InputMismatchDetected}
2) Prompt the user to choose a method of numeric integration, either
   [1] Rectanglular, or
   [2] Trapezoidal, or
   [3] Both
   {reprompt if one of these is not selected or InputMismatchDetected}
3) Let user choose the amount of rectangles and trapezoids used. These are independently determined in the case that both are chosen.
   {reprompt if not an integer or InputMismatchDetected}
4) Print function being evaluated: **f(x)=2x$^2$**
5) Print starting and ending points
6) Print number of rects/traps used
7) Print the calculated areas by the selected methods.
    a. Area by rectangles:
        i. Base = (end point – start point)/# rects
        ii. Height = f(sum of previous bases)
        iii. Total Area = $\sum_{i=0}^{\#\ rectangles} base_i * height_i$
    b. Area by trapezoids
        i. Base = (end point – start point)/# traps
        ii. Height1 = f(sum of previous bases)
        iii. Height2 = f(sum of previous bases + current base)
        iv. Total Area = $\sum_{i=0}^{\#\ trapezoids} 1/2(base1_i + base2_i) * height_i$

## Q2: Describe your plan for determining the errors and handling the errors that might arise from various user input. See the list of errors you are required to handle in the assignment to help write your plan

I plan to use try/catch blocks nested inside while loops to catch the errors and give the user a chance to input a correct value.

I will catch InputMismatchException to verify that an integer is used. And I will use logic (if/then) to determine if the values entered are in the correct range.