Name: Mubashar Khan **Assignment #:** 8

Summary of Problem Statement

Problem # 1

Create a program that will analyze data provided by a data file and generate the Riemann Sums along with the midpoint and display additional information in the form o fa graph.

Known / Input

area_data.csv
num_Rect = user defined value
Bounds [0,3]
t = [0:0.1:3]

Unknown / Output

info = matrix containing all values for print statement

Assumptions

The user provided a data set which also has 7 columns.

Other Variables

area1,area2,area3,Left_sum1,Right_sum1,Midpoint1,Left_sum2, Right_sum2,Midpoint2,Left_sum3,Right_sum3,Midpoint3
these are the intermediate values need to calculate everything

Algorithm

Import data file
Create 4 function files titled: fn1, fn2, fn3 and Compute_area
In the three fn files, input the 3 formulas provided
In Compute_area start by taking the integral of each of the 3 functions over the interval of either [0,3] or [0,zero-point]
Then proceed to find the left right riemann sums and midpoint.
Do this for all 3 functions
The next step is to create a number of graphs equal to the number of rows in the dataset.
The find the number of rows, use the size function
now use fzero to find the points where fn2 and fn3 meet fn1 and store those values in a variable
using this variable find the y value at those points and place a dot and counter
The area under the curve between the two intersection points must be shaded in a semi-transparent color.
to do this use set() to change the color properties using a 'facealpha' in the option portion of set()
Then create a formatted output that will print the information from the matrix info where all data from Compute_area was stored.

Test Cases

The test case I used for this was the provided dataset. I dont know if what I did was correct because the output was not really that clear.