

Main Exercises Week 2

MATH 131-02: Calculus II

Your Name (Print): _____

Due: Wednesday, January 29, 2020 at 1:30pm

Follow the general guidelines for the Main Exercises assignments (the salmon colored hand-out). Complete your work on this handout. Be sure to **staple** together your pages if you have more than one. Neatness and correctly mathematical grammar is appreciated, makes a good first impression, and can earn you a bonus point!!!

Remember: Your write-up should be **your own**. You may discuss these problems with others, but **you should be alone when you write them up**, using only outlines of any group or Intern discussions. **EXPLAIN** and **SHOW YOUR WORK!!!** Final answers will not receive full credit without supportive explanations.

1. REVIEW: Solve the following indefinite integral: $\int \sec \theta (\tan \theta + 5 \cos \theta + 2 \sec \theta - \cos^2 \theta) d\theta$. Remember to show each step carefully.

2. (a) Sketch the graph of $f(x) = \frac{2}{x}$ on the interval $(0, 4]$. Make it large enough to complete part (c) clearly!

(b) Suppose we want to estimate the area under f on the interval $[1, 3]$ using eight rectangles. Calculate Δx and the grid/sample points that define your subintervals.

(c) Illustrate the left and right Riemann sums/rectangles on your graph in part (a). Make it clear which is which (using different colors is a good way to do this). Determine which Riemann sum underestimates and which sum overestimates the area under the curve. Write a sentence explaining your conclusions.

(d) Calculate both the left and right Riemann sums. Be sure to show the details of your calculations.

With whom did you work on this assignment? (List names or state that you worked alone.)

How much time did you spend on this main exercises assignment? _____