Reading Assignment 9 (Due Friday 7/16/21 by 12:55 PM)

Basic learning objectives: These are the tasks you should be able to perform with reasonable fluency **when you arrive at our next class meeting**. Important new vocabulary words are indicated in italics.

1. Define in general a double Riemann sum over a rectangle.

2. Set up a double Riemann sum over a rectangular domain using appropriate notation.

3. Define the double integral of a continuous function over a rectangle as a limit of a double Riemann sum.

Advanced learning objectives: In addition to mastering the basic objectives, here are the tasks you should be able to perform **after class, with sufficient practice:**

1. Interpret double Riemann summations as approximations of signed volume under a graph of a function. Interpret double integrals as a measure of signed volume.

2. Interpret the average value of a function as a double integral or as being approximated by a double Riemann sum.

3. Evaluate double Riemann sums in simple examples. Set up and evaluate appropriate double Riemann sums to approximate volumes.

Directions: Read the following sections of the book:

- Section 10.8. I read through this during class, but you should make sure you understand the details.

- Section 11.1.1 and 11.1.2.

and complete the following tasks along the way. If an Activity is not listed, you do not need to complete it (although you are welcome to read it). Turn your write up in via gradescope. You do not need to write the questions down, as long as you clearly indicate the question number.

1. Preview Activity 11.1.1.

2. Activity 11.1.2. The goal of this activity is to write down a double Riemann sum (which approximates the volume under the graph of a function over a certain rectangle). The process is similar to approximating the area under a curve by rectangles, as seen in Calc I. Do not let the number of questions overwhelm you - the author has deliberately broken down the process into bite-sized steps.