

Daily Prep Assignment for March 16th

Overview

In sections 11.1 and 11.2 we define double integrals which can be used to compute the signed area under a surface. Just like for single variable calculus we begin with the conceptual understanding of Riemann sums. We then turn our attention in 11.2 to how to compute these integrals using anti-derivatives.

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*.

- Recall Riemann sums from single variable calculus.
- Understand how to partition a rectangle into smaller rectangles and how to index those rectangles.
- Understand how to find the area under a trace of a function using a single variable integral.

Advanced learning objectives

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

- Be able to interpret double Riemann sum notation.
- Be able to approximate volume under surfaces using a double Riemann sum.
- Understand how using Riemann sums and taking a limit as the number of rectangles goes to infinity will compute the volume under a surface.
- Understand how iterated integrals first slice a volume into area and then slice each area into thin columns.
- Evaluate iterated integrals.

To prepare for class

Preview activities: Read the example preview activity solution on the course website then,

- Preview activity 11.1.1
- Preview activity 11.2.1

Reading:

- read section 11.1
- read section 11.2

Watching: Watch these additional resources if you need support reading the text.

1. Overview of extra 11.1: <https://youtu.be/XR8iVxdyYs8>
2. Overview of extra 11.2: <https://youtu.be/VEqbIHxTLDY>

During and after class

- Activity 11.1.2
- Activity 11.1.3
- Activity 11.1.4
- Activity 11.2.2
- Activity 11.2.3
- Activity 11.2.3