Daily Prep Assignment for March 23rd

Overview

In section 11.6 we learn how to paramatrize surfaces using a pair of parameters. This will allow us to describe surfaces in space that are not the graph of a single function such as a torus or a sphere. We will also investigate how to compute the surface area of any paramatrized surface. Much of this theory should feel like a higher dimensional version of parameterizing curves and finding their arc length.

To prepare for class

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

- Preview activity 11.6.1

Reading:

- Read section 11.6

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

1. Overview 11.6: `https://youtu.be/gaXp4MzFA_s`

During and after class

- Activity 11.6.2

- Activity 11.6.3

- Activity 11.6.4

- For some regions, when setting up a double integral you must write it as the sum of two different double integrals. This problem is one such example.

   1. Sketch the region of integration for the double integral

   $$\int_0^1 \int_y^{2-y} 1 \, dx \, dy.$$

   2. Change the order of integration to $dy \, dx$ for this integral.

- Consider the integral over the unit square $\int_0^1 \int_0^1 x \, dx \, dy$. Write this integral in polar coordinates with order of integration $d\theta \, dr$. You do not need to evaluate it.