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1. Visualizing surfaces in 3 dimensions

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We have a powerful tool in using level curves (also known as contours or level sets). However, there are times when you really want to understand a function as a surface that sits in three dimensional space. In this section, we will learn methods of visualizing surfaces to get a better sense of how we can think of our surface restricted to various planes to get a better sense of the shape in space.

Objectives

After this section and some practice, you will be able to

- Visualize **planes intersecting with surfaces** .
- Find formulas for planes intersecting surfaces.
- Find the **domain** of a 2-variable function.
- Think about the **units** of the inputs, outputs, and derivatives of multivariable functions.
- Describe the **dimension** of any variable in terms of fundamental dimensions.

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1. Visualizing surfaces in 3 dimensions

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