# Numerical Integration

Remember learning how to integrate in Calculus? Remember how most integrals do not have closed form solution?

**Useless!**

Instead, we will learn **numerical integration** and use it to solve integrals you couldn't solve in you calculus class, in a way that is easier than you calculus class was.

We will be looking at integrals of the form:

$$\int_b^a f(x)\,dx$$

## Remann Sum

The **Remann Sum** is a numerical integration technique that approximates the area under a curve using infintesmal rectangles.

Essentially, we evaluate:

$$\int_b^a f(x)\,dx = \sum_{n=0}^{n-1} f(x)\Delta x$$

## Spreadsheet

As usual, the first approach is using a spreadsheet in Microsoft Excel. In this particular case, this tool works very poorly. The number of cells you need become unweildly.