

# Using Circles to Approximate Riemann Sums

Evan Derby

11 December 2015

## 1 Introduction

Riemann Sums are a method of approximating the area underneath a curve by adding up the areas of shapes, usually rectangles. As the width of these rectangles approaches zero, the approximation approaches the Riemann integral.

$$\sum f(x)\Delta x = \int_a^b f(x)dx$$

Historically, Riemann's definition was the first rigorous definition of the integral of a function on an interval.