

Section 5.2: The Definite Integral

These notes reflect material from our text, *Calculus, Concepts and Contexts, Second Edition*, by James Stewart, published by Brooks/Cole, Pacific Grove, CA, 2001.

Key points from Stewart, Section 5.2: Definition of the definite integral as a limit of Riemann sums.

Concepts

The definition of the **definite integral** of f from a to b ,

$$\int_a^b f(x) dx = \lim_{n \rightarrow \infty} \sum_{i=1}^n f(x_i^*) \Delta x$$

The definite integral calculates *signed area*.

Properties of the definite integral. Integrals of sums, differences, and constant multiples. Monotonicity.

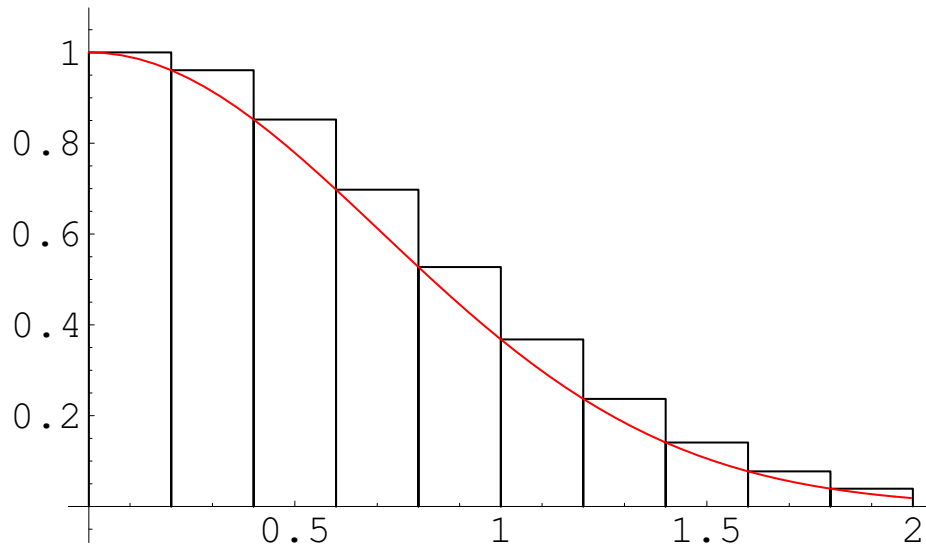


Fig. The definite integral is a limit of Riemann sums.

Exercises

Exercises for Section 5.2, pp 367–369: 1, 6, 11, 16, 20, 23, 30, 32, 35, 40, 41, 42, 48, 49