

Section 5.2: The Definite Integral

These notes reflect material from our text, *Calculus, Concepts and Contexts, Third Edition*, by James Stewart, published by Brooks/Cole, Pacific Grove, CA, 2005.

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.

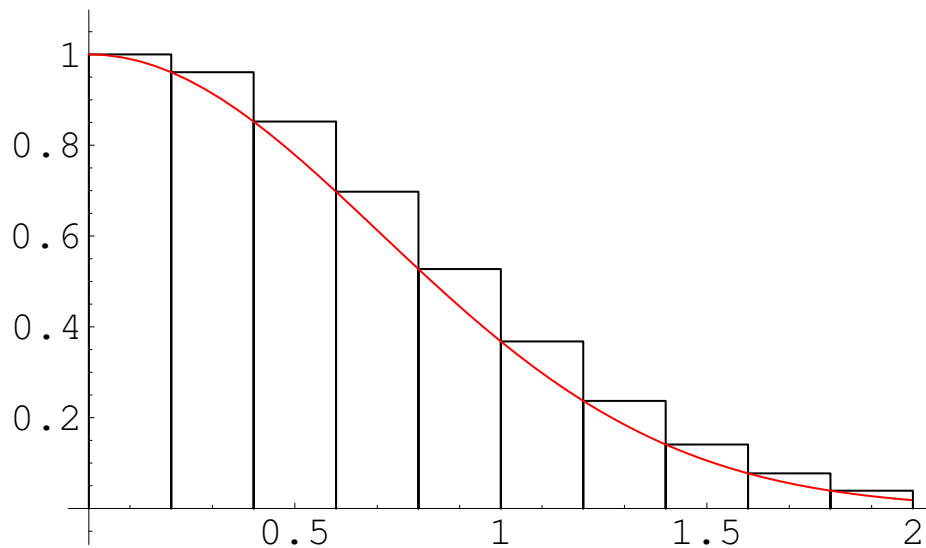


Fig. The definite integral is a limit of Riemann sums.

Exercises

Exercises for Section 5.2, pp 364–366: 1, 5, 8, 9, 15, 19, 23, 31, 32, 35, 37, 44 (definite integrals)