

Three ways to evaluate a definite integral

Consider the following definite integral:

$$\int_0^5 f(x)dx , \tag{1}$$

where

$$f(x) = 3x . \tag{2}$$

Evaluate the integral three ways:

1. Using left- and right-hand sums. Choose a reasonable Δx .
2. Using geometry to determine the area under $f(x)$.
3. Using the fundamental theorem of calculus.

