Three ways to evaluate a definite integral

Consider the following definite integral:

\[ \int_{0}^{5} f(x)dx , \]  

(1)

where

\[ f(x) = 3x . \]  

(2)

Evaluate the integral three ways:

1. Using left- and right-hand sums. Choose a reasonable \( \Delta x \).

2. Using geometry to determine the area under \( f(x) \).

3. Using the fundamental theorem of calculus.