

Fundamental Theorem of Calculus: If f is continuous on the interval $[a, b]$ then

$$\int_a^b f(x) dx = F(x) \Big|_a^b = F(b) - F(a)$$

where F is an antiderivative of f .

Example 1. Evaluate $\int_0^3 x^2 dx$.

Example 2. Find the area under the curve $y = 1/x^2$ between the lines $x = 1$ and $x = 3$.

Example 3. Find the area of the region bounded by $y = 1 - x^2$ and the x -axis.