

6.5 - Fundamental Theorem of Calculus

Reminder: INdefinite Integral is a **family of functions**.

DEFINITE Integral is a number.

Fundamental Theorem of Calculus - If f is continuous on $[a,b]$, and F is any antiderivative of f , then

$$\int_a^b f(x) dx = F(b) - F(a). \quad (\text{represents the change in } F \text{ from } x = a \text{ to } x = b).$$

Example:

The average value of f on $[a,b]$ is given by $\frac{1}{b-a} \int_a^b f(x) dx$.

More Examples: