

Module 6: Interpreting Notational Expressions

Suppose f and g are continuous functions.

- (a) Suppose the interval $[1, 3]$ is divided into n subintervals, each of width Δx_i , and let x_i^* be a point in the i th subinterval. Express the following limit as a definite integral:

$$\lim_{n \rightarrow \infty} \sum_{i=1}^n \frac{x_i^*}{(x_i^*)^2 + 4} \cdot f(x_i^*) \cdot \Delta x_i$$

- (b) Suppose $\int_0^4 f(x) dx = 5$ and $\int_0^4 g(x) dx = -7$. Find $\int_0^4 [2f(x) - 3g(x)] dx$.

- (c) Suppose $\int_{10}^{14} f(x) dx = 11$ and $\int_{10}^{20} f(x) dx = 8$. Find $\int_{14}^{20} f(x) dx$.

- (d) Let $H(x) = \int_{x^2}^4 f(t)g(t) dt$. Find an expression for $H'(x)$.