

Evaluating or Approximating Definite Integrals

[1 – 10] Evaluate each definite integral.

[1] $\int_3^6 -2 dx$

[2] $\int_6^3 -2 dx$

[3] $\int_1^4 |x-2| dx$

[4] $\int_4^1 |x-2| dx$

[5] $\int_1^{-1} \sqrt{1-x^2} dx$

[6] $\int_{-1}^1 \sqrt{1-x^2} dx$

[7] $\int_{-4}^6 (x+2) dx$

[8] $\int_{-1}^5 (|x-2|-1) dx$

[9] $\int_{-2}^0 \sqrt{4-x^2} dx$

[10] $\int_0^2 (2x-1) dx$

[11] Use the graph of $y = h(x)$ to evaluate the following.

[a] $\int_0^4 h(x) dx$

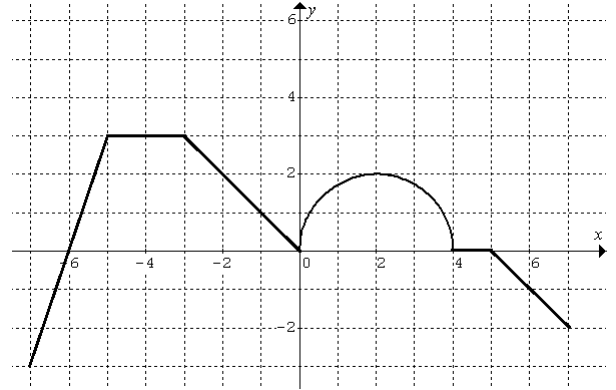
[b] $\int_4^2 h(x) dx$

[c] $\int_4^7 h(x) dx$

[d] $\int_{-7}^0 h(x) dx$

[e] $\int_{-7}^{-5} h(x) dx$

[f] $\int_7^{-7} h(x) dx$



[12 - 14] The graph at the right is for $y = f(x)$.

[12] Let $F(x) = \int_3^x f(t) dt$. Evaluate the following.

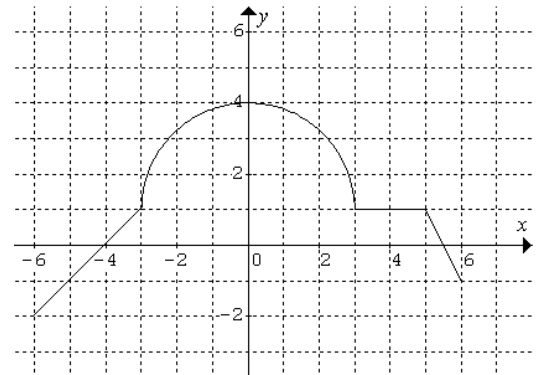
[a] $F(3)$

[b] $F(0)$

[c] $F(-5)$

[d] $F(4) - F(2)$

[e] $F(6) - F(0)$



[13] Let $G(x) = \int_x^{x-3} f(t) dt$. Evaluate the following.

[a] $G(0)$

[b] $G(3)$

[c] $G(6)$

[14] [a] $\int_{-6}^6 f(x) dx$

[b] $\int_6^{-6} f(x) dx$

[c] $\int_5^6 [2 + f(x)] dx$

[d] $\int_0^3 [x + f(x)] dx$

[e] $\int_0^3 [3f(x)] dx$

[f] $\int_0^3 [f(x) - 2x] dx$

Definite Integral Properties

Given $\int_2^4 f(x) dx = 10$, $\int_4^9 f(x) dx = -2$, $\int_2^4 g(x) dx = 5$, and $\int_9^4 g(x) dx = 1$. Both f and g are everywhere continuous. Evaluate each of the following expressions.

$$[1] \int_4^2 f(x) dx$$

$$[2] \int_2^4 [3 + f(x)] dx$$

$$[3] \int_2^4 [2x + f(x)] dx$$

$$[4] \int_4^2 [f(x) + g(x)] dx$$

$$[5] \int_2^4 [3f(x) - 2g(x)] dx$$

$$[6] \int_2^4 [3f(x) - x] dx$$

$$[7] \int_2^9 f(x) dx$$

$$[8] \int_2^9 g(x) dx$$

$$[9] \int_2^{-3} g(x) dx - \int_4^{-3} g(x) dx$$

$$[10] \int_3^3 f(x) dx$$

$$[11] \int_9^3 g(x) dx + \int_3^4 g(x) dx$$

$$[12] \int_4^6 g(x-2) dx$$

$$[13] \int_4^2 [5g(x) - 1] dx$$

$$[14] \int_8^{18} f\left(\frac{x}{2}\right) dx$$