

Evaluate each definite integral. Confirm the answer using your graphing calculator.

1.  $\int_0^1 2x \, dx$

2.  $\int_{-1}^0 (x - 2) \, dx$

3.  $\int_{-1}^1 t^2 - 2 \, dt$

4.  $\int_0^1 (2t - 1)^2 \, dt$

5.  $\int_1^2 \left( \frac{3}{x^2} - 1 \right) dx$

6.  $\int_{-1}^8 (\sqrt[3]{x} - 2) dx$

7.  $\int_1^9 (\sqrt{x} + \sqrt{x^3}) \, dx$

8.  $\int_{-\frac{\pi}{6}}^{\frac{\pi}{6}} \sec^2 x \, dx$

9.  $\int_0^\pi (1 + \sin x) dx$

10.  $\int_1^2 \left( \frac{x^2 + 2x - 1}{x} \right) dx$

11.  $\int_{-1}^4 |2x - 4| dx$

12.  $\int_{-4}^3 |x^2 - 4| dx$

13. What is the exact area of the region between  $f(x) = x - x^2$  and the x-axis, on the interval  $[0,1]$ ?

14. What is the exact area of the region between  $f(x) = \cos x$  and the x-axis, on the interval  $\left[0, \frac{\pi}{2}\right]$ ?