

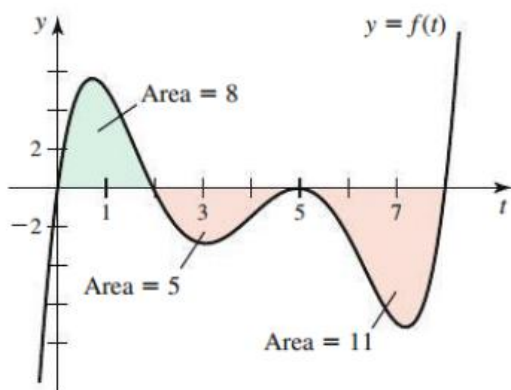
5.3 Group Activity Problems



9. Evaluate $\frac{d}{dx} \int_a^x f(t) dt$ and $\frac{d}{dx} \int_a^b f(t) dt$, where a and b are constants.

14. **Area functions** The graph of f is shown in the figure. Let $A(x) = \int_0^x f(t) dt$ and $F(x) = \int_2^x f(t) dt$ be two area functions for f . Evaluate the following area functions.

- a. $A(2)$ b. $F(5)$ c. $A(0)$ d. $F(8)$
e. $A(8)$ f. $A(5)$ g. $F(2)$



25–28. Definite integrals Evaluate the following integrals using the Fundamental Theorem of Calculus. Sketch the graph of the integrand and shade the region whose net area you have found.

25. $\int_{-2}^3 (x^2 - x - 6) dx$

26. $\int_0^1 (x - \sqrt{x}) dx$

73–86. Derivatives of integrals Simplify the following expressions.

76. $\frac{d}{dx} \int_x^0 \frac{dp}{p^2 + 1}$

78. $\frac{d}{dx} \int_0^{x^2} \frac{dt}{t^2 + 4}$