

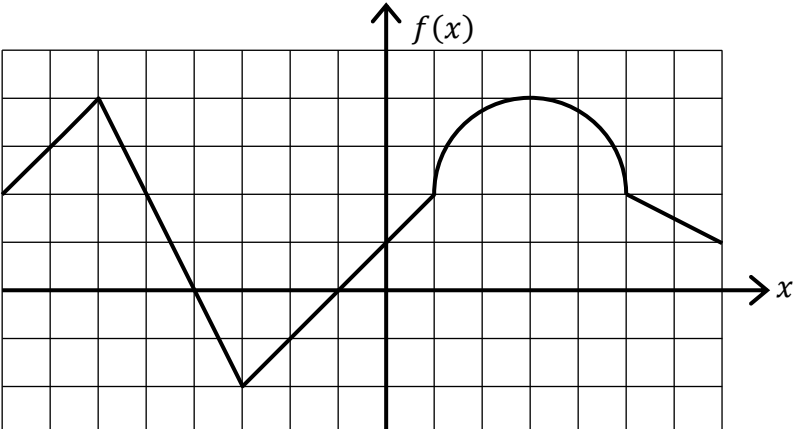
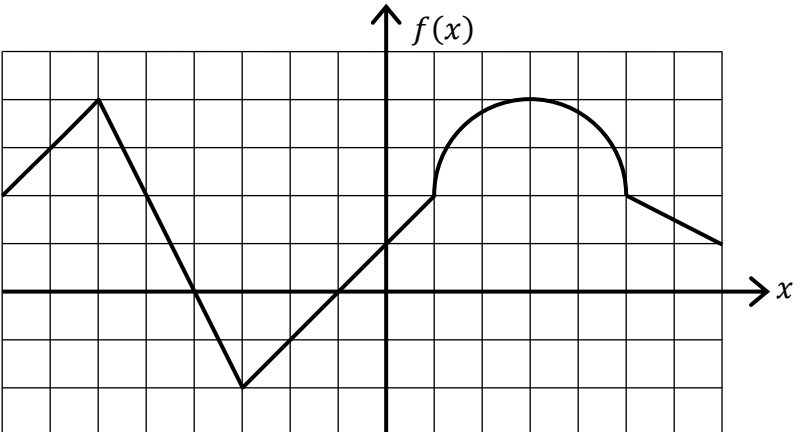
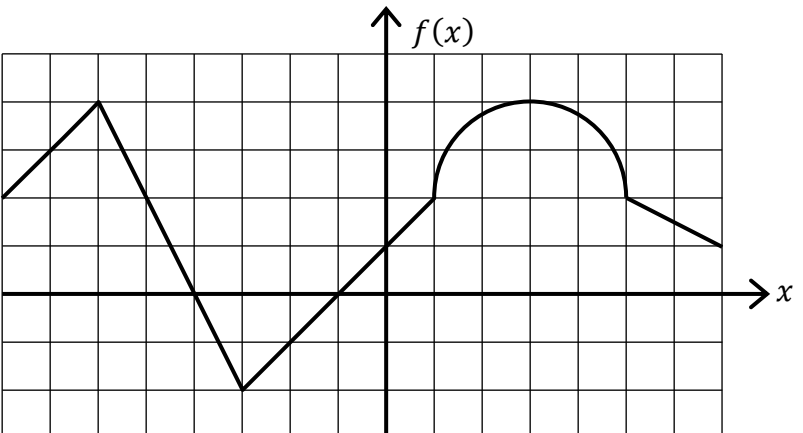
Definite Integrals for Functions whose Graphs are Geometric Shapes (Stewart Section 5.2)

Part 1: Examples Where the Graph is Given

Instructions: For each definite integral,

- (i) Shade the region between the graph of $f(x)$ and the x axis that corresponds to the integral.
 (Shade the regions above the x axis one color and the regions below the axis a different color.)
 (ii) Use geometric formulas to find areas of the shaded shapes. Then find the value of the integral.

Integral	Shaded Region	Value
$(A) \int_{x=-6}^{x=1} f(x) dx$		
$(B) \int_{x=-5}^{x=1} f(x) dx$		
$(C) \int_{x=-4}^{x=1} f(x) dx$		

Integral	Shaded Region	Value
$(D) \int_{x=-5}^{x=5} f(x)dx$		
$(E) \int_{x=5}^{x=5} f(x)dx$		
$(F) \int_{x=5}^{x=1} f(x)dx$		

Part 2: Examples Where the Integrand is given by a Formula

[1] For the integral $\int_{x=2}^{x=8} \left(\frac{1}{2}\right)x - 2 \, dx$

- (a) Graph the integrand.
- (b) Shade the region between the graph of $f(x)$ and the x axis that corresponds to the integral.
(Shade the regions above the x axis one color and the regions below the axis a different color.)
- (c) Use geometric formulas to find areas of the shaded shapes. Then find the value of the integral.

[2] For the integral $\int_{x=6}^{x=11} \sqrt{25 - (x - 6)^2} dx$

- (a) Graph the integrand. (Hint: The graph of the integrand is a basic geometric shape!)
- (b) Shade the region between the graph of $f(x)$ and the x axis that corresponds to the integral.
(Shade the regions above the x axis one color and the regions below the axis a different color.)
- (c) Use geometric formulas to find areas of the shaded shape.