

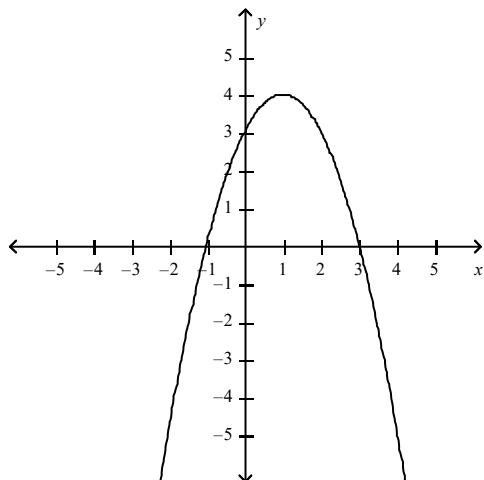
## Stewart Calc 7ET ch01sec03

## MULTIPLE CHOICE

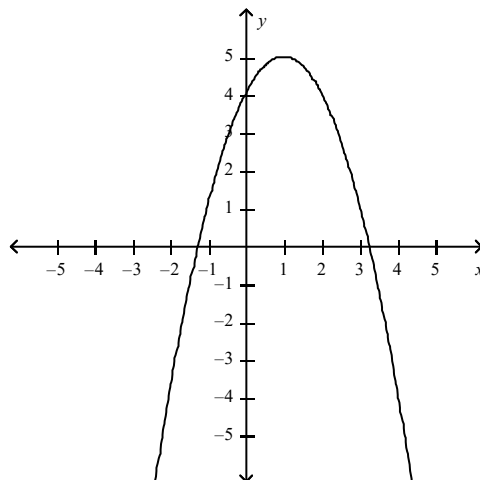
1. Graph the function by hand, not by plotting points, but by starting with the graph of one of the standard functions and then applying the appropriate transformations.

$$y = 4 + 2x - x^2$$

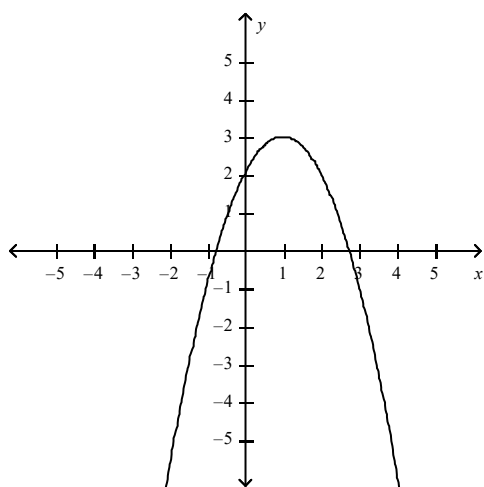
a.



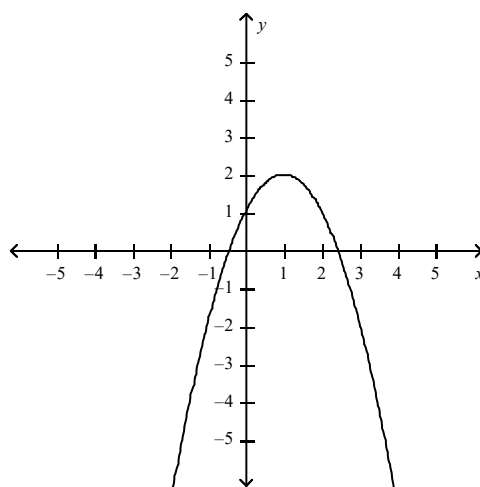
c.



b.



d.



ANS: C

PTS: 1

DIF: Medium

REF: 1.3.12

MSC: Bimodal

NOT: Section 1.3

2. If  $f(x) = x + 5$  and  $h(x) = 4x - 10$ , find a function  $g$  such that  $g \circ f = h$ .

- a.  $g(x) = 4x + 30$
- b.  $g(x) = 4x$
- c.  $g(x) = x - 30$
- d.  $g(x) = 4x - 30$
- e.  $g(x) = x + 30$

ANS: D      PTS: 1      DIF: Medium      REF: 1.3.61b  
 MSC: Bimodal      NOT: Section 1.3

3. Use the table to evaluate the expression  $(f \circ g)(6)$ .

$x$	1	2	3	4	5	6
$f(x)$	3	2	1	0	1	2
$g(x)$	6	5	2	3	4	6

- a. 5
- b. 2
- c. 3
- d. 4
- e. 6

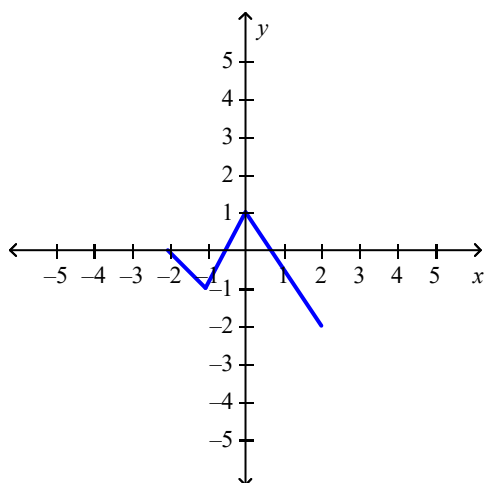
ANS: B      PTS: 1      DIF: Medium      REF: 1.3.50f  
 MSC: Bimodal      NOT: Section 1.3

4. What is  $\sqrt[10]{x}$ , given that  $H = f \circ g \circ h$  and  $H(x) = \sqrt[10]{\sqrt{x} - 3}$  ?

- a.  $h(x)$
- b.  $g(x)$
- c.  $f(x)$

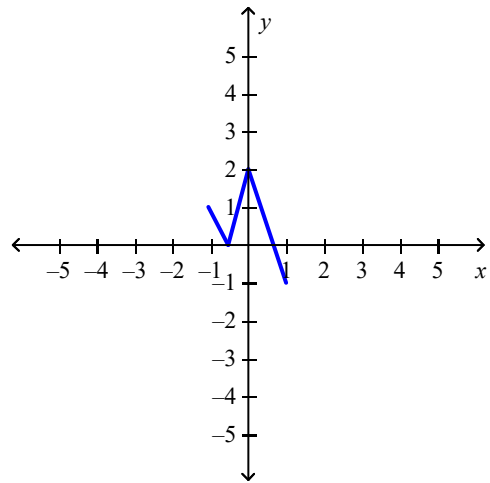
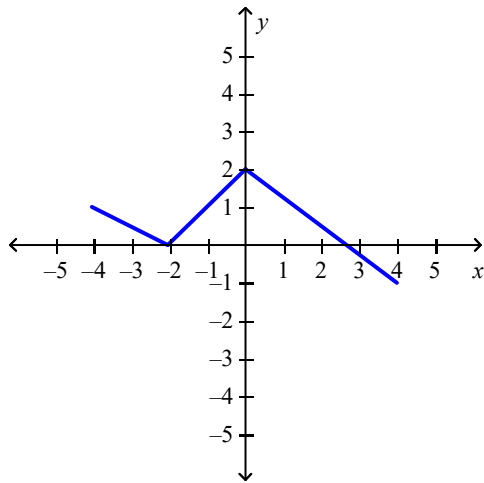
ANS: C      PTS: 1      DIF: Medium      REF: 1.3.47  
 MSC: Bimodal      NOT: Section 1.3

5. The graph of the function  $f$  follows. Choose the graph of  $y = f\left(\frac{x}{2}\right) + 1$ .

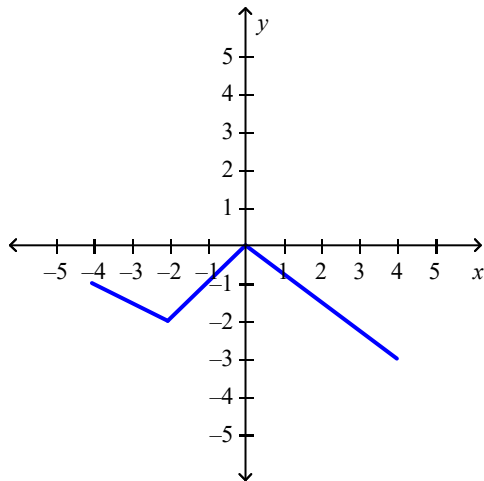


a.

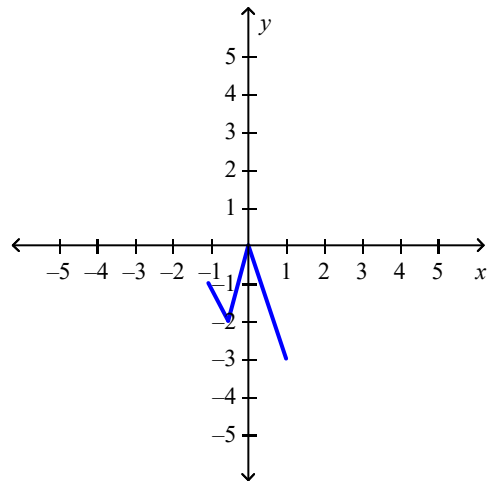
c.



b.



d.



ANS: A

PTS: 1

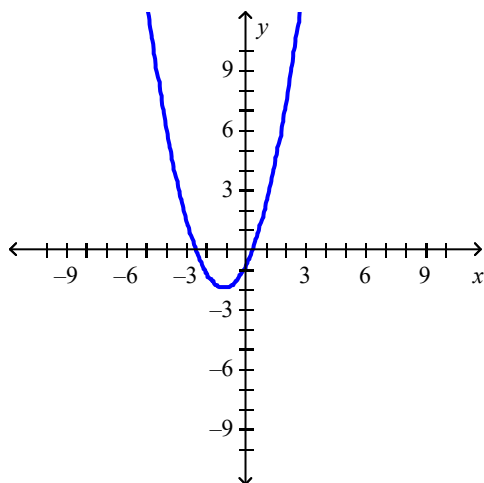
DIF: Medium

REF: 1.3.5b

MSC: Bimodal

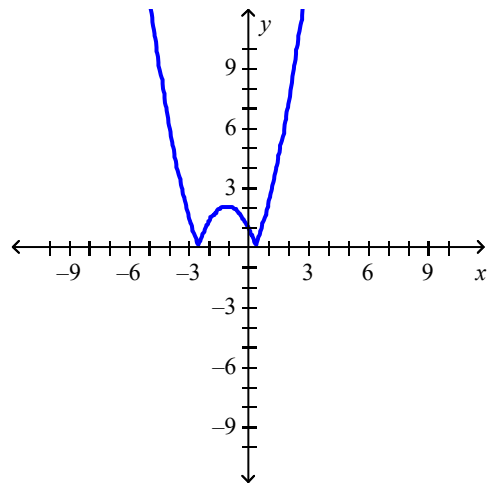
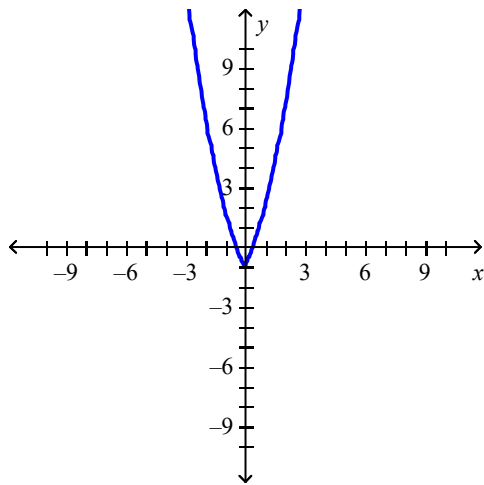
NOT: Section 1.3

6. The graph of the function  $f$  follows. Choose the graph of  $y = f(|x|)$ .

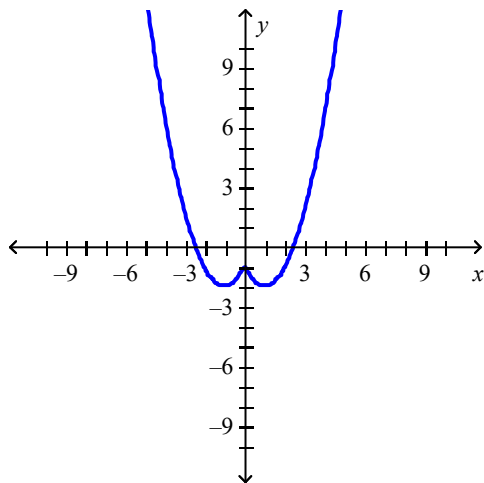


a.

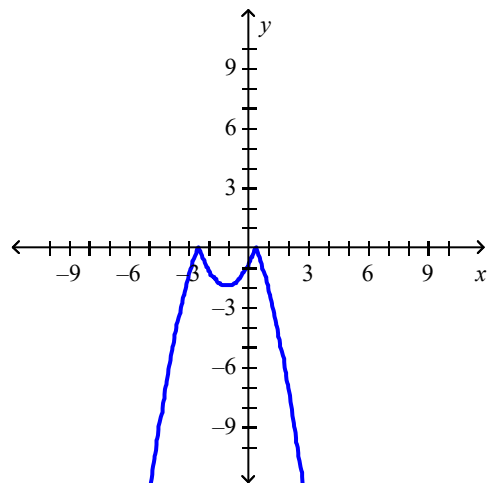
c.



b.



d.



ANS: A

PTS: 1

DIF: Medium

REF: 1.3.5c

MSC: Bimodal

NOT: Section 1.3

7. Suppose that the graph of  $f$  is given. Describe how the graph of the function  $y = f(x - 5) - 5$  can be obtained from the graph of  $f$ .

- Shift the graph 5 units to the left and 5 units down.
- Shift the graph 5 units to the left and 5 units up.
- Shift the graph 5 units to the right and 5 units up.
- Shift the graph 5 units to the right and 5 units down.
- None of these

ANS: D

PTS: 1

DIF: Medium

REF: 1.3.1bc

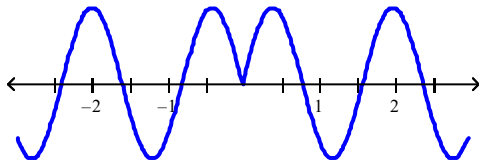
MSC: Bimodal

NOT: Section 1.3

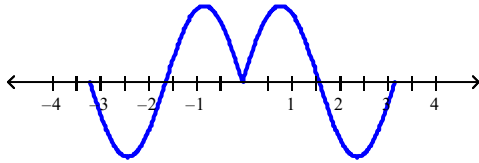
8. Which of the following graphs is the graph of the function?

$$f(x) = \sin|2x|$$

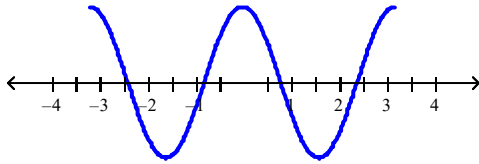
Graph 1



Graph 2



Graph 3



- a. Graph 2
- b. Graph 1
- c. Graph 3

ANS: A

PTS: 1

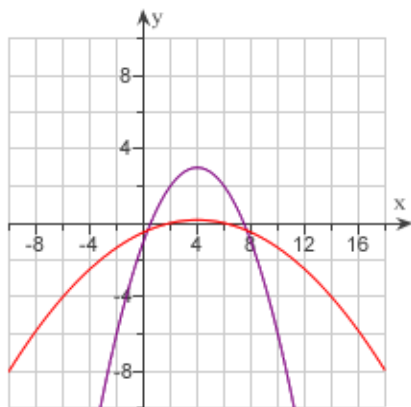
DIF: Medium

REF: 1.3.24

MSC: Bimodal

NOT: Section 1.3

9. Which of the following is the equation for the function  $g(x)$ ?



- a.  $g(x) = -f(x) + 6$

b.  $g(x) = 6f(x)$   
 c.  $g(x) = f(x) - 6$

d.  $g(x) = \frac{f(x)}{6}$

e.  $g(x) = -f(x + 6)$

ANS: D                      PTS: 1                      DIF: Medium                      REF: 1.3.3c  
 MSC: Bimodal                      NOT: Section 1.3

## NUMERIC RESPONSE

1. Express the function in the form of  $f \circ g \circ h$ .

$$H(x) = 2 - 4^{x^3}$$

ANS:  $h(x) = x^3, g(x) = 4^x, f(x) = 2 - x$

PTS: 1                      DIF: Medium                      REF: 1.3.48  
 MSC: Numerical Response                      NOT: Section 1.3

2. A spherical balloon with radius  $r$  inches has volume

$$4 \frac{\pi r^3}{3}.$$

Find a function that represents the amount of air required to inflate the balloon from a radius of  $r$  inches to a radius of  $r + 3$  inches.

ANS:  $12\pi(r^2 + 3r + 3)$

PTS: 1                      DIF: Medium                      REF: 1.3.54  
 MSC: Numerical Response                      NOT: Section 1.3

3. Express the function in the form of  $f \circ g$ .

$$v(t) = \sec(t^4) \tan(t^4)$$

\_\_\_\_\_

ANS:  $f(t) = \sec(t) \tan(t)$

$$g(t) = t^4$$

PTS: 1                      DIF: Medium                      REF: 1.3.45

MSC: Numerical Response

NOT: Section 1.3

4. A stone is dropped into a lake, creating a circular ripple that travels outward at a speed of 45 cm/s. Express the radius  $r$  of this circle as a function of the time  $t$  (in seconds) and find  $A \circ r$ , if  $A$  is the area of this circle as a function of the radius.

ANS:  $r(t) = 45t$ ,  $2025\pi t^2$ 

PTS: 1

DIF: Medium

REF: 1.3.53a

MSC: Numerical Response

NOT: Section 1.3

**SHORT ANSWER**

1. Let  $f(x) = x^2 - 6x + 5$  and  $g(x) = \sqrt{x+5}$ . Find  $(g \circ g)(20)$ .

ANS:

$$\sqrt{10}$$

PTS: 1

DIF: Easy

REF: 1.3.36

MSC: Short Answer

NOT: Section 1.3

2. Find  $f \circ g \circ h$  if

$$f(x) = \frac{1}{x}, \quad g(x) = 2x^2 + 7, \quad \text{and} \quad h(x) = \cos x$$

ANS:

$$\frac{1}{2 \cos^2 x + 7}$$

PTS: 1

DIF: Medium

REF: 1.3.37

MSC: Short Answer

NOT: Section 1.3