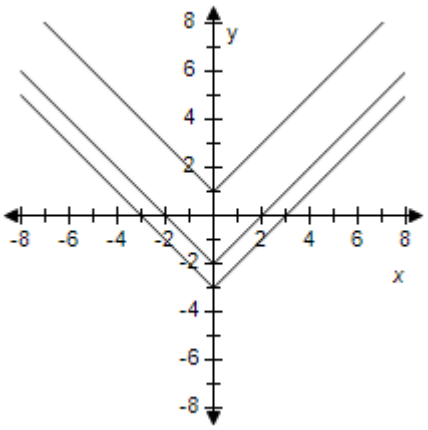
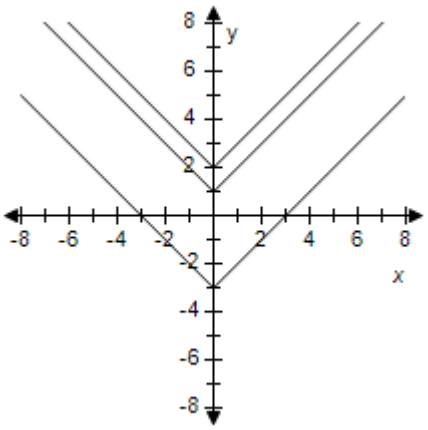
1. For following function, select (on the same set of coordinate axes) a graph for $c = -3,\ 1 \text{ and } 2$.

$f(x) = |x| + c$

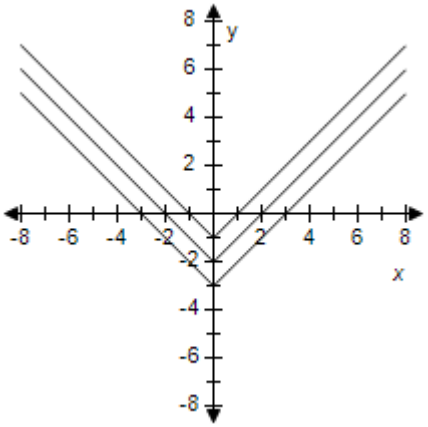
a.



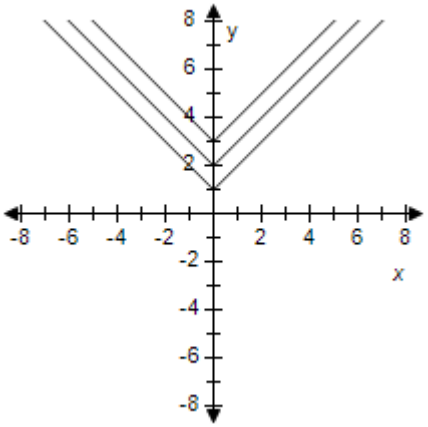
b.



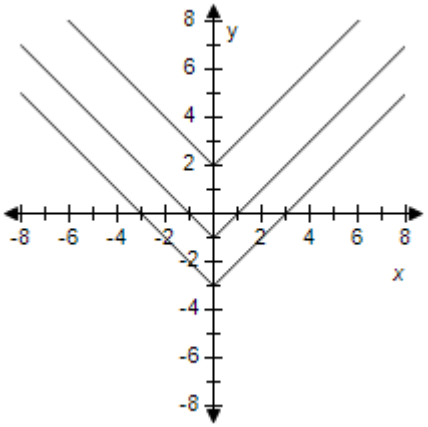
c.



d.



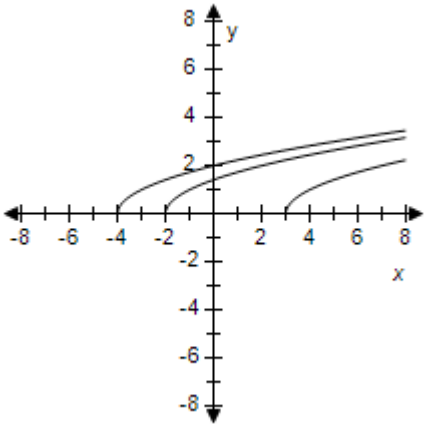
e.



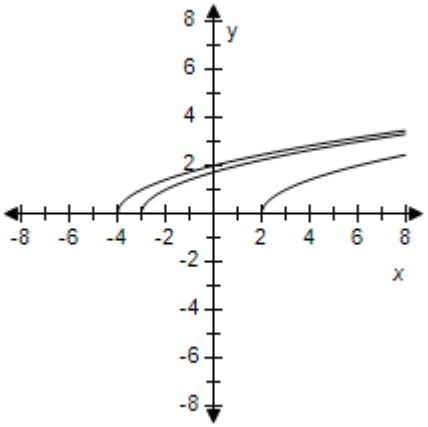
2. For following function, select (on the same set of coordinate axes) a graph for $c = -4, 2 \text{ and } 3$.

$f(x) = \sqrt{x+c}$

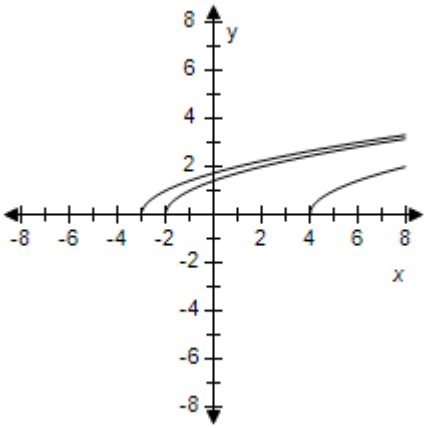
a.



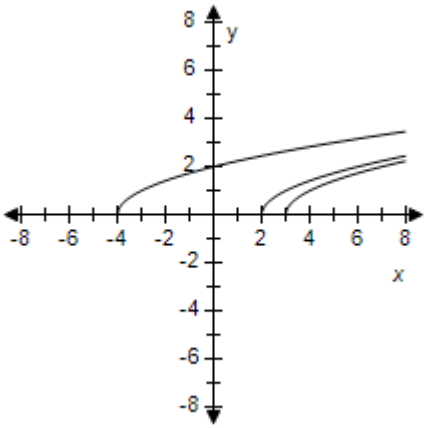
b.



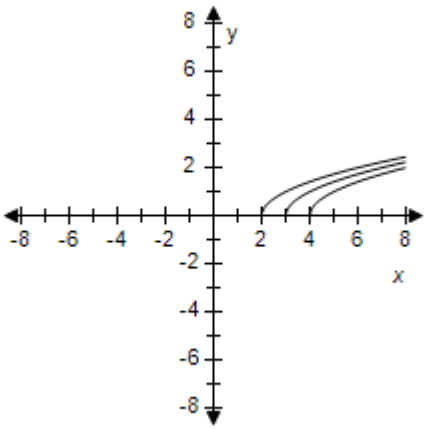
c.



d.



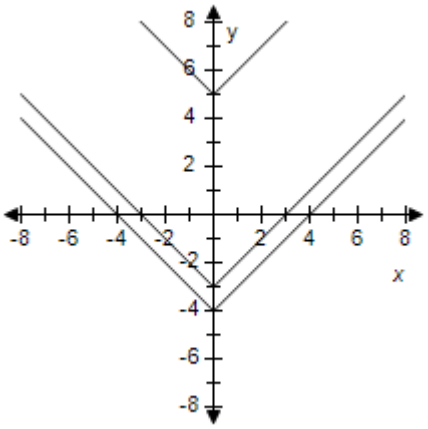
e.



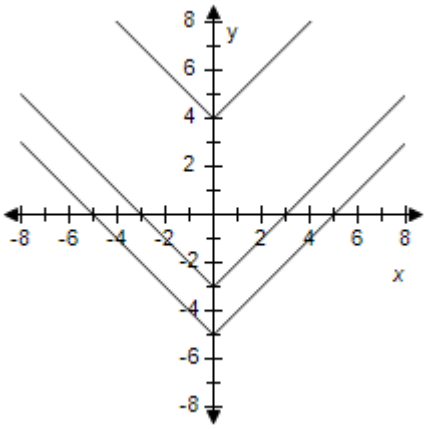
3. For following function, select (on the same set of coordinate axes) a graph for $c = -3,\ 5 \text{ and } 4$.

$f(x) = |x - c|$

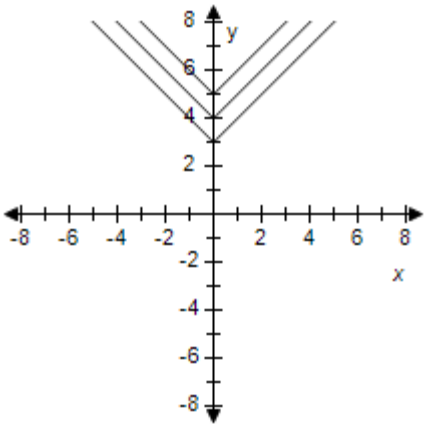
a.



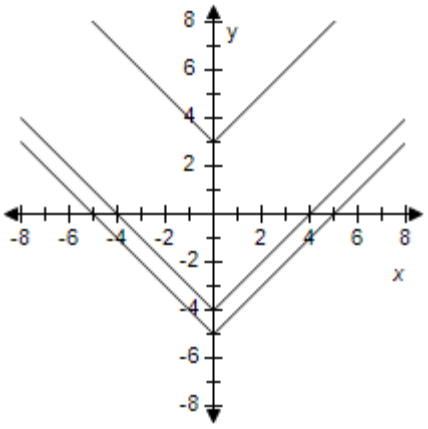
b.



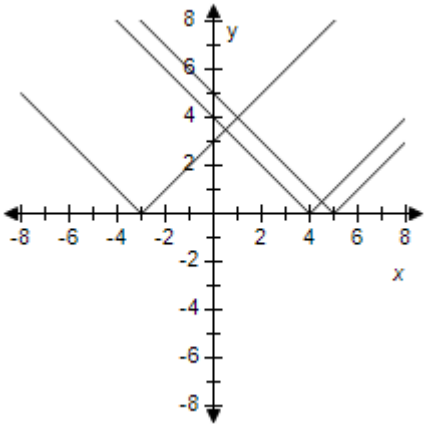
c.



d.



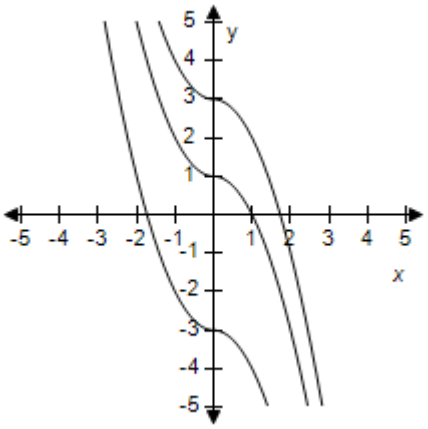
e.



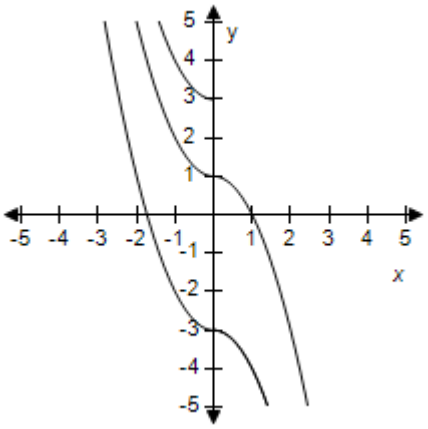
4. For following function, select (on the same set of coordinate axes) a graph of function for $c = 3,\ 1$ and -3.

$$f(x) = \begin{cases} x^2 + c, & x < 0 \\ -x^2 + c, & x \geq 0 \end{cases}$$

a.

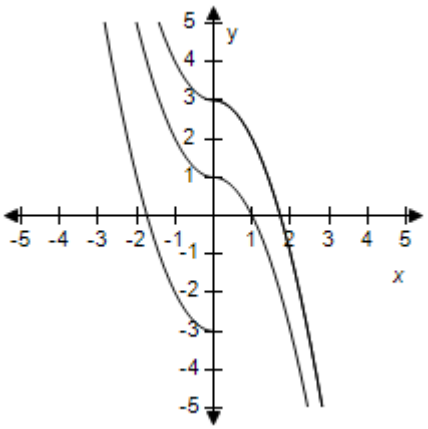


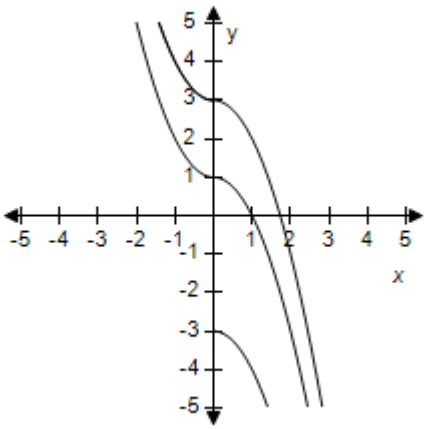
b.



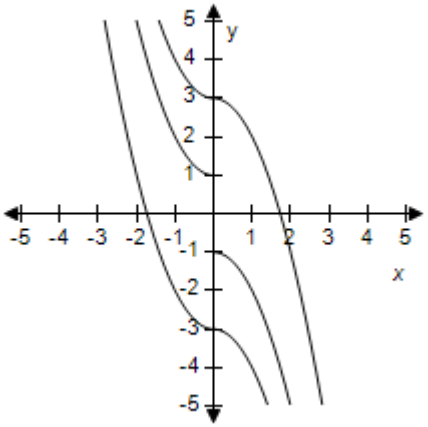
c.

d.



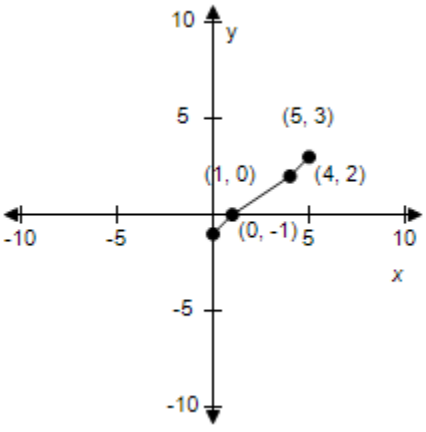


e.

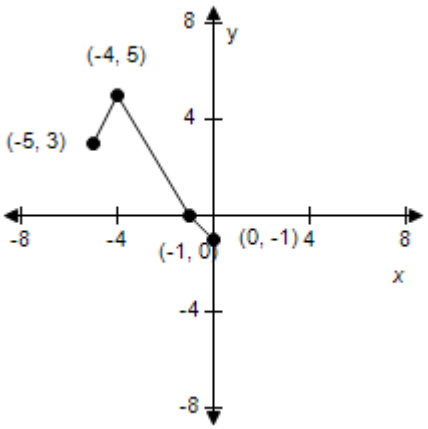


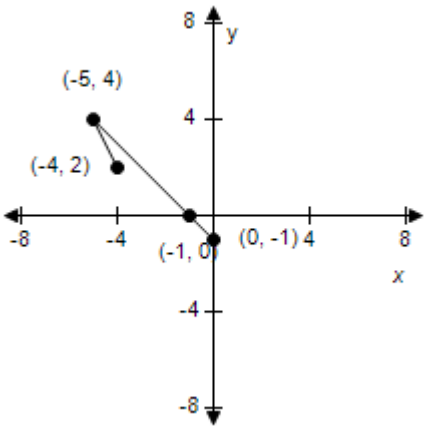
5. Use the given graph of *f* to select the graph for the following function.

$y = f(-x)$

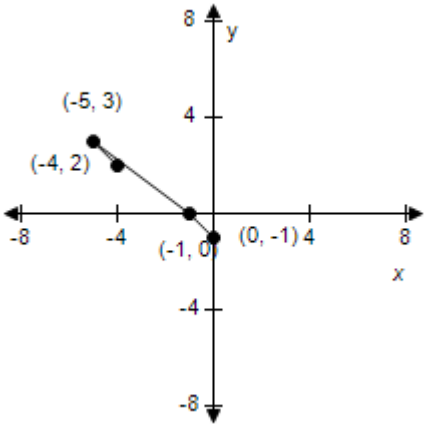


a. b.

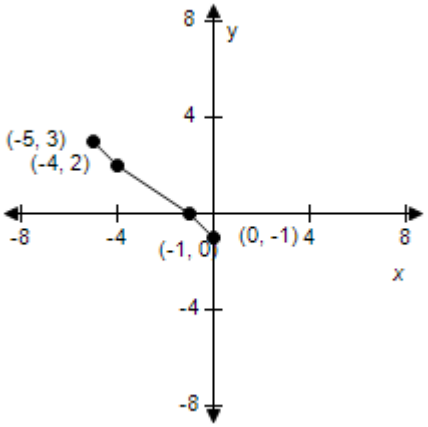




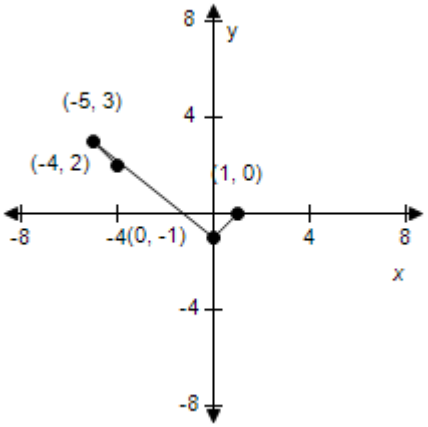
c.



d.

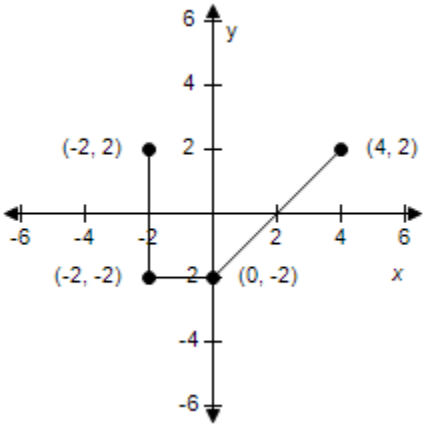


e.



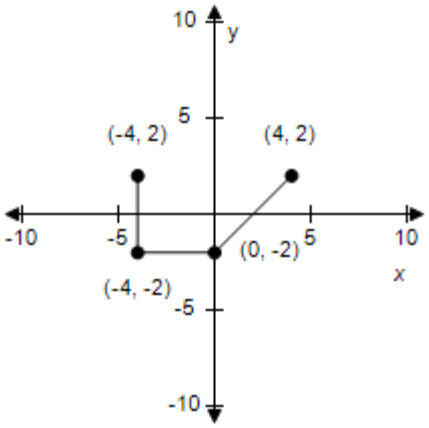
6. Use the given graph of *f* to select the graph for the following function.

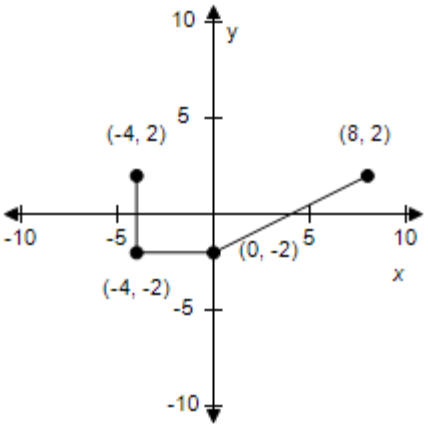
$y = f(2x)$



a.

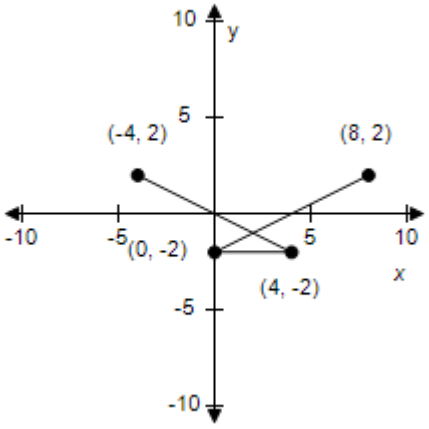
b.

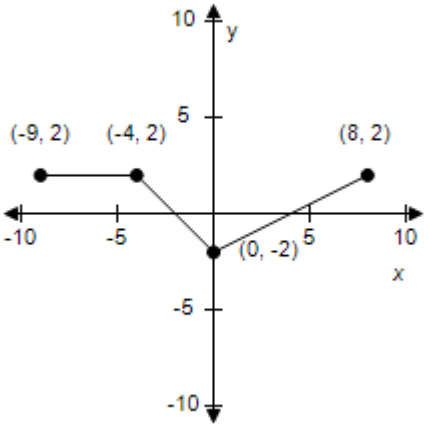




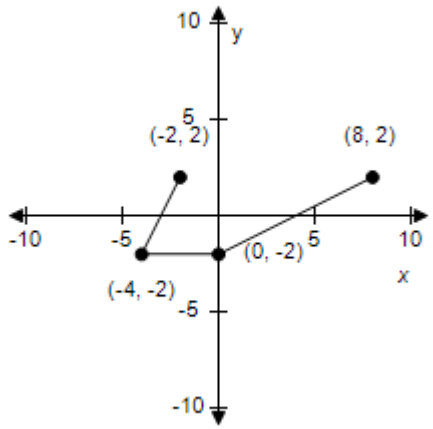
c.

d.



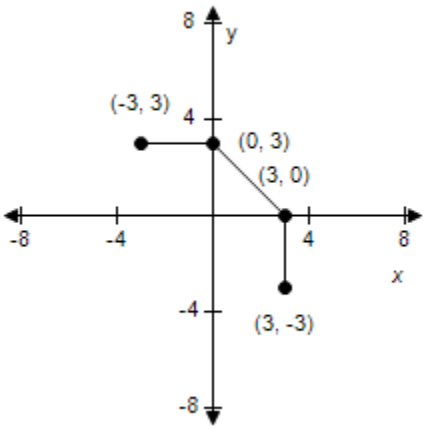


e.

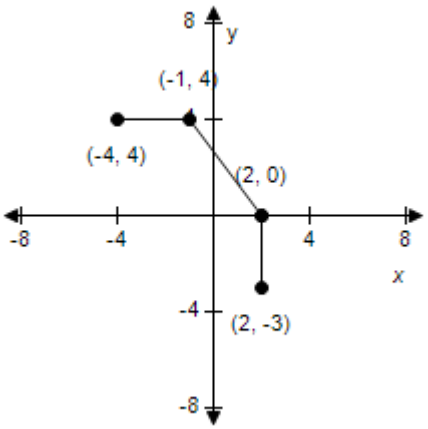


7. Use the given graph of *f* to select the graph for following function.

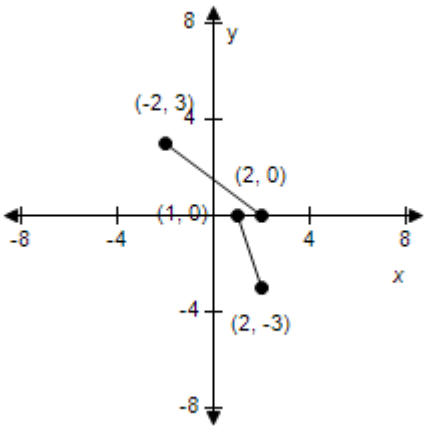
$y = f(x + 1)$



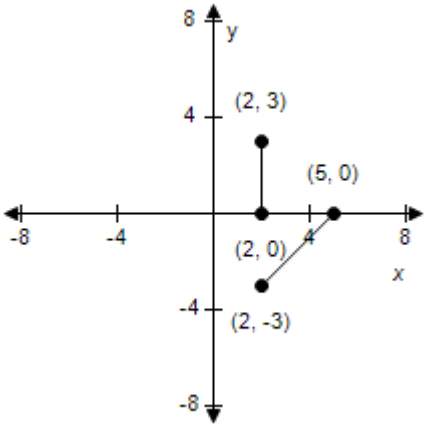
a. b.



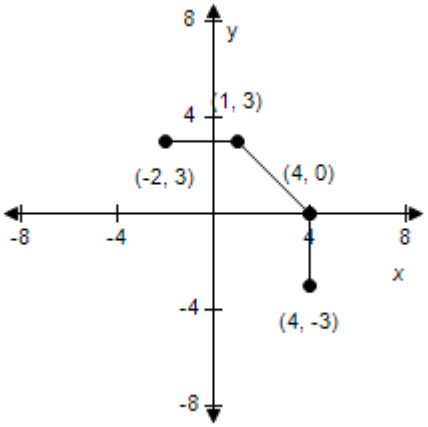
c.

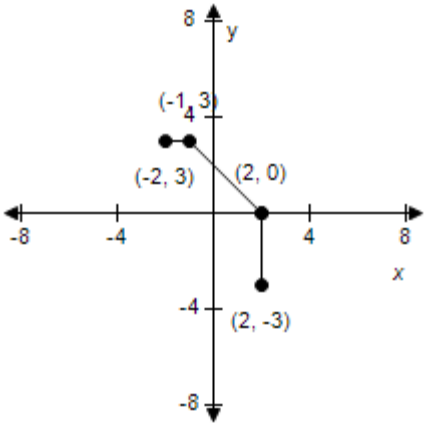


d.



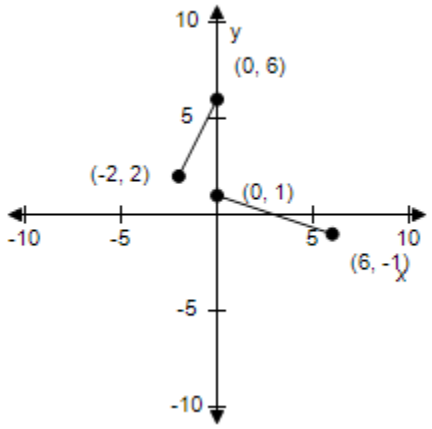
e.



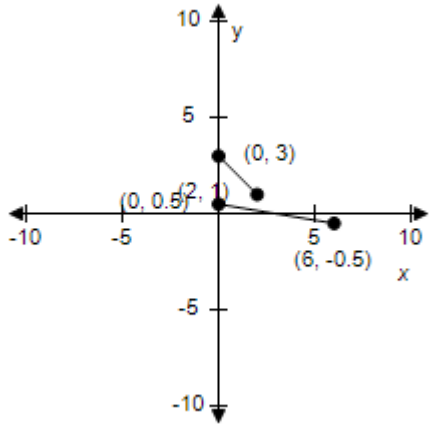


8. Use the given graph of *f* to select the graph for following function.

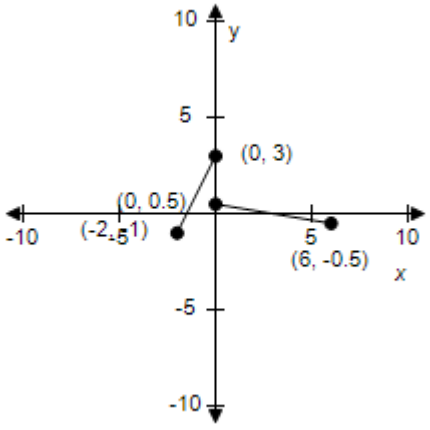
$$y = \frac{1}{2}f(x)$$



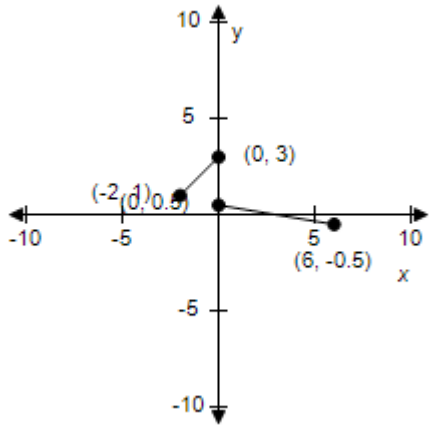
a.



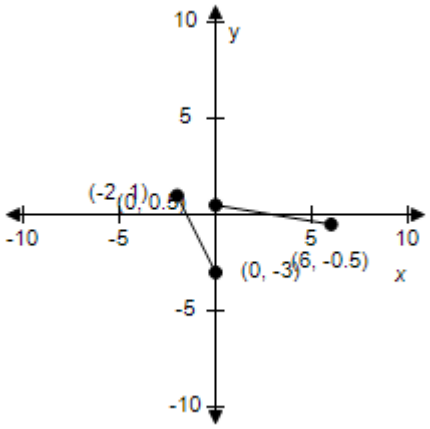
b.



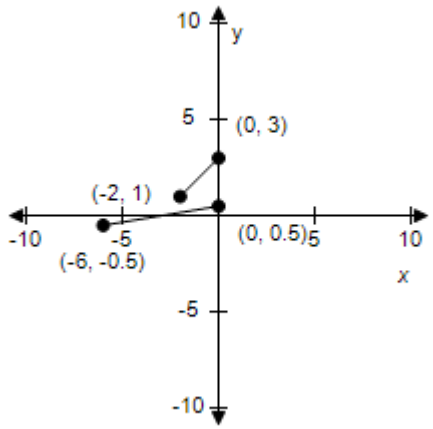
c.



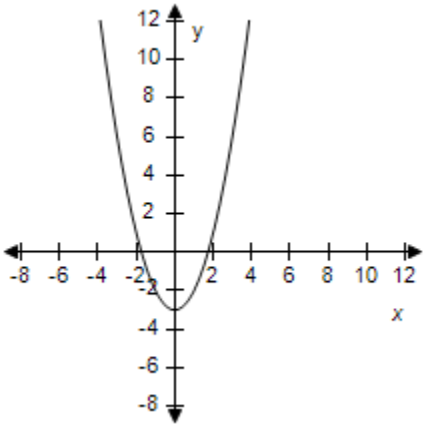
d.



e.



9. Use the graph of $f(x) = x^2$ to write an equation for the function whose graph is shown.



a. $y = x^2 + 3$

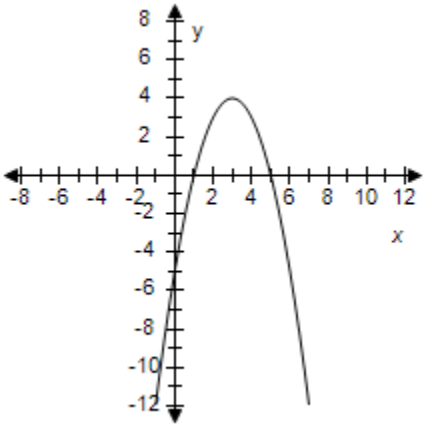
b. $y = x^2 + 4$

c. $y = -x^2$

d. $y = x^2 - 3$

e. $y = x^2 - 4$

10. Use the graph of $f(x)=x^2$ to write an equation for the function whose graph is shown.



a. $y=-(x-3)^2+4$

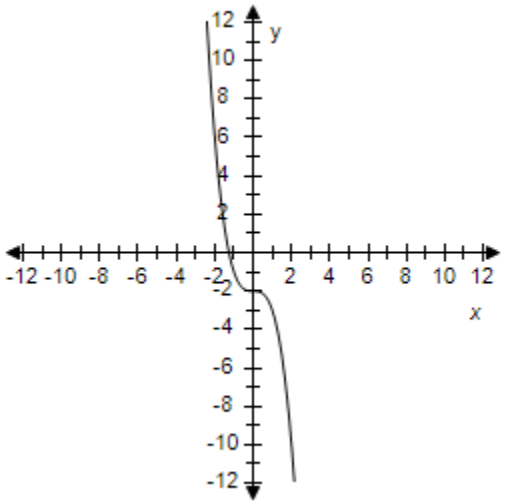
b. $y=-(x-3)^2-4$

c. $y=(x+3)^2+4$

d. $y=(x-3)^2+4$

e. $y=-(x+3)^2+4$

11. Use the graph of $f(x)=x^3$ to write an equation for the function whose graph is shown.



a. $y=-3+x^3$

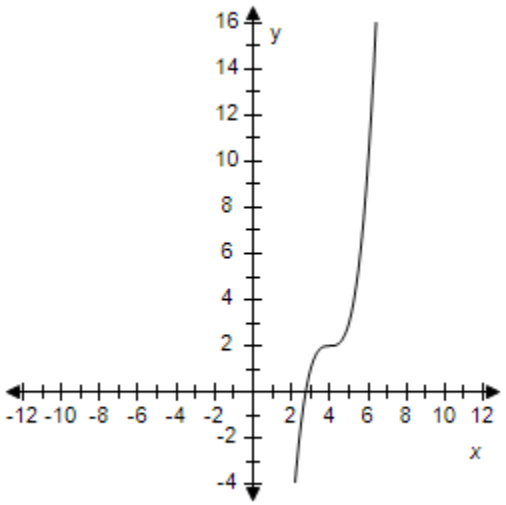
b. $y=-3-x^3$

c. $y = -4 + x^3$

d. $y = -2 + x^3$

e. $y = -2 - x^3$

12. Use the graph of $f(x) = x^3$ to write an equation for the function whose graph is shown.



a. $y = (x-4)^3 - 1$

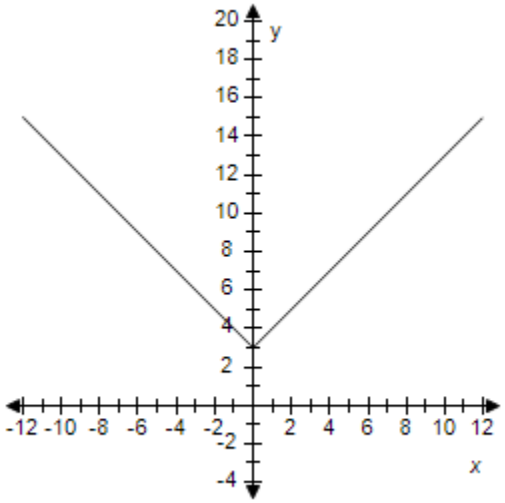
b. $y = (x+4)^3 + 2$

c. $y = (x+4)^3 - 2$

d. $y = (x-4)^3 + 2$

e. $y = (x-4)^3 + 1$

13. Use the graph of $f(x) = |x|$ to write an equation for the function whose graph is shown.



a. $y = |x| + 4$

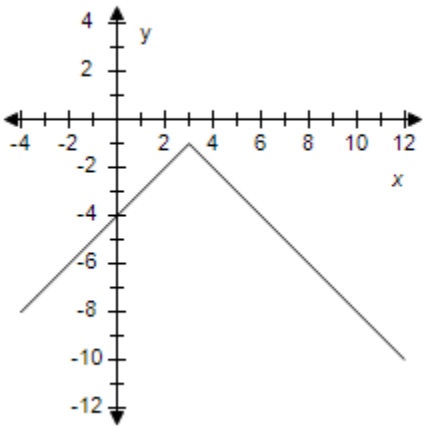
b. $y = |x| - 3$

c. $y = |x| - 4$

d. $y = |x| + 5$

e. $y = |x| + 3$

14. Use the graph of $f(x) = |x|$ to write an equation for the function whose graph is shown.



a. $y = -|x+3|-1$
b. $y = |x+3|+1$
c. $y = -|x-3|+1$
d. $y = -|x-3|-1$
e. $y = |x-3|-1$

15. The parent function $f(x) = |x|$ is related to *g*. Describe the sequence of transformations from *f* to *g*.

$g = -|x|-5$

a. Reflection in the *y*-axis and vertical shift five units downward.
b. Reflection in the *x*-axis and vertical shift five units downward.
c. Reflection in the *x*-axis and vertical shift five units upward.
d. Reflection in the *y*-axis and vertical shift five units upward.
e. Reflection in the *x*-axis and horizontal shift five units to the right.

16. The parent function $f(x) = \sqrt{x}$ is related to *g*. Use function notation to write *g* in terms of *f*.

$g(x) = \sqrt{\frac{1}{2}x - 4}$

a. $g(x) = f\left(\frac{1}{2}x\right) - 4$
b. $g(x) = f\left(\frac{1}{2}\right) + 4$
c. $g(x) = f\left(\frac{1}{2}x\right) + 4$
d. $f(x) = g\left(\frac{1}{2}x\right) - 4$
e. $g(x) = f\left(\frac{1}{2}\right) - 4$

18. Write an equation for the function that is described by the given characteristics.

The shape of $f(x)=x^2$, but shifted four units to the right and four units downward.

a. $g(x)=(x-4)^2-4$

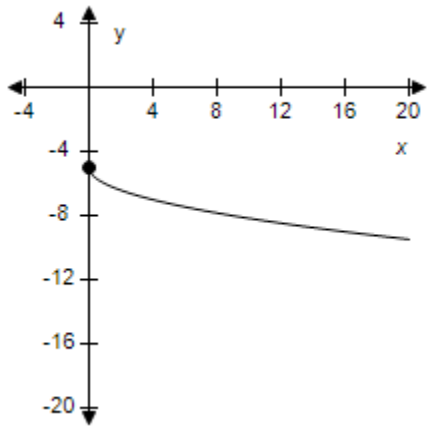
b. $g(x)=(x^2-4)-4$

c. $g(x)=(x+4)^2-4$

d. $g(x)=(x+4)^2+4$

e. $g(x)=(x-4)^2+4$

19. Use the viewing window shown to select a possible equation for the transformation of the parent function.



a. $y = \sqrt{x}-5$

b. $y = -\sqrt{x}+5$

c. $y = -\sqrt{x}-5$

d. $y = \sqrt{x}+5$

e. $y = -\sqrt{x}-6$

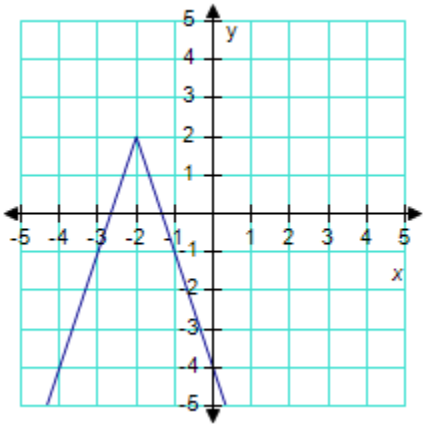
20. Determine whether the statement is true or false. Justify your answer.

The graphs of $f(x) = |x|+5$ and $f(x) = |-x|+5$ are identical.

a. False. $|x| \neq |-x|$

b. True. $|x| = |-x|$

21. Use the graph of $f(x) = |x|$ to write an equation for the function whose graph is shown.



a. $f(x) = -3|x-2|+2$

b. $f(x) = -3|x+2|+2$

c. $f(x) = |-3x+2|+2$

d. $f(x) = -3|x+2|-2$

e. $f(x) = |-3x-2|+2$

22. Write an equation for the function that is described by the following characteristics.

The shape of $f(x) = x^2$, but shifted eight units down, three units to the left, and then reflected in the *x*-axis.

a. $g(x) = 3-(x+8)^2$

b. $g(x) = -(x+3)^2-8$

c. $g(x) = 8 - (x + 3)^2$

d. $g(x) = -(x + 8)^2 - 3$

e. $g(x) = 8 - (x - 3)^2$

23. Describe the sequence of transformations from the related common function $f(x) = x^3$ to *g*.

$g(x) = 2(x - 8)^3$

a. Horizontal shift 8 units to the right; then vertical stretch by a factor of 2.
b. Horizontal shift 8 units to the left; then vertical stretch by a factor of 2.
c. Horizontal shift 8 units to the left; then vertical shrink by a factor of 2.
d. Vertical shift 8 units upward; then vertical shrink by a factor of 2.
e. Vertical shift 8 units downward; then vertical shrink by a factor of 2.

24. Describe the sequence of transformations from the related common function $f(x) = \sqrt{x}$ to *g*.

$g(x) = -\sqrt{x} + 3$

a. Reflection in the *x*-axis; then vertical shift 3 units downward.
b. Reflection in the *x*-axis; then vertical shift 3 units upward.
c. Reflection in the *y*-axis; then vertical shift 3 units upward.
d. Reflection in the *y*-axis; then horizontal shift 3 units to the right.
e. Reflection in the *y*-axis; then horizontal shift 3 units to the left.