Name:_____ Class:_____ Date:_____

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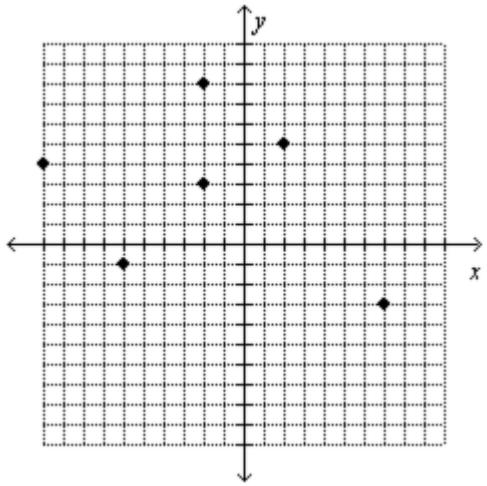
Indicate the answer choice that best completes the statement or answers the question.

1. Which statement is true for the graph of $f(x) = 2x^3 - 6x^2 - 48x + 24$?

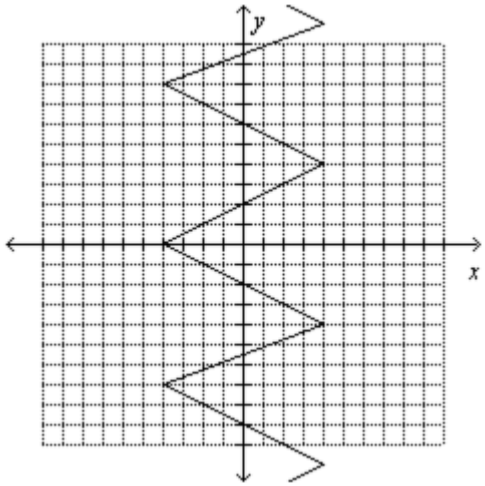
   a. (4, –140) is a relative minimum; (–2, 77) is a relative maximum
   b. (4, –136) is a relative minimum; (–2, 80) is a relative maximum
   c. (–2, 80) is a relative minimum; (4, –136) is a relative maximum
   d. (–2, 77) is a relative minimum; (4, –140) is a relative maximum

2. Which of the following graphs is a function?

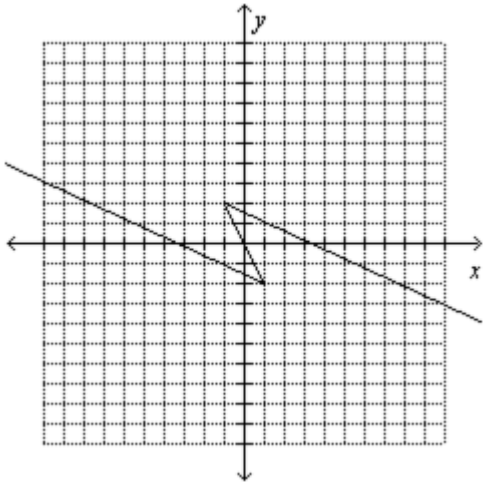
a.



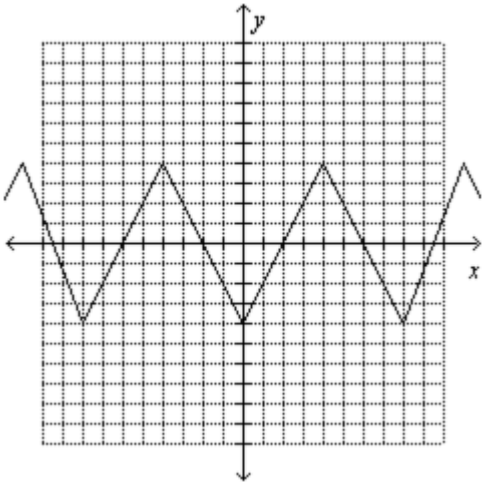
b.



c.

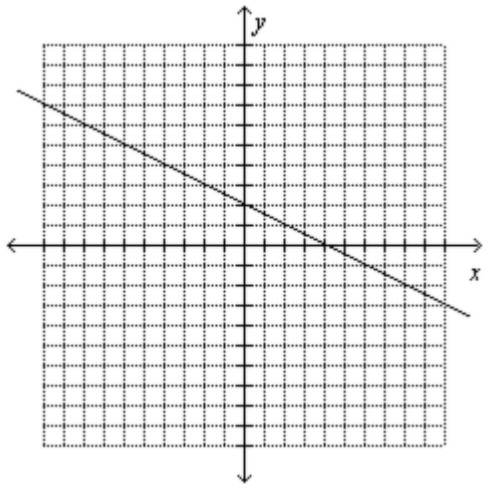


d.

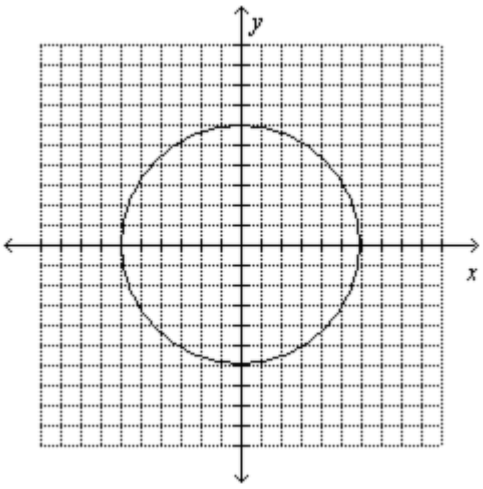


3. Which of the following graphs is a function?

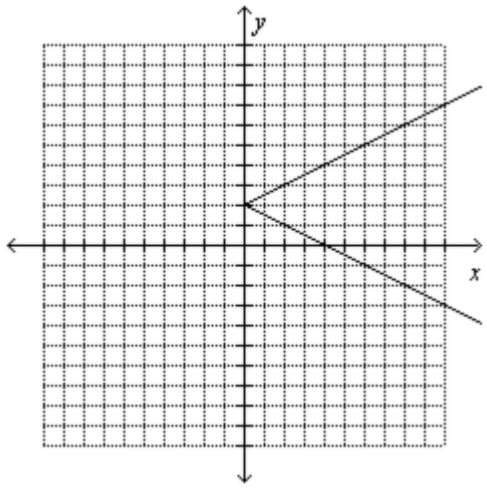
a.



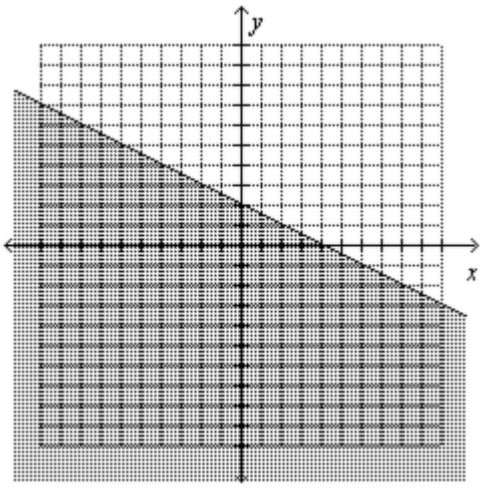
b.



c.



d.



4. Identify the function for which an inverse function exists.

a. $f(x) = 5x^2 - 3$ b. $f(x) = |x - 1|$

c. $f(x) = \sqrt{x + 2}$ d. $f(x) = [[x + 5]]$

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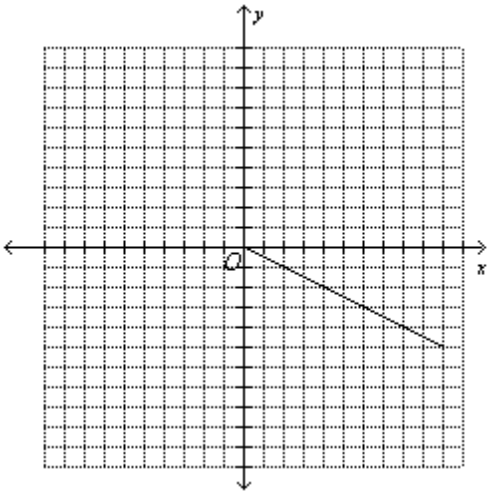
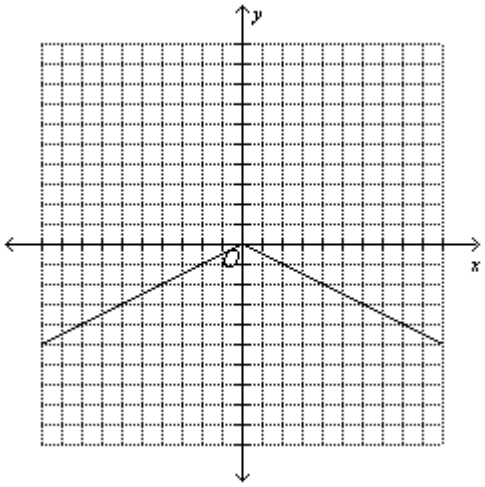
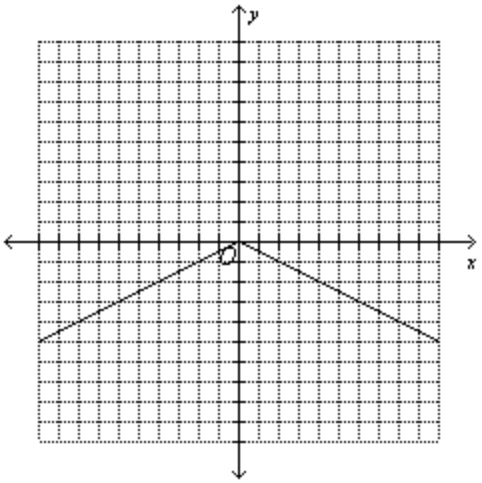
5. The graph below is a portion of a complete graph. Which graph below is the complete graph assuming it is an even function?



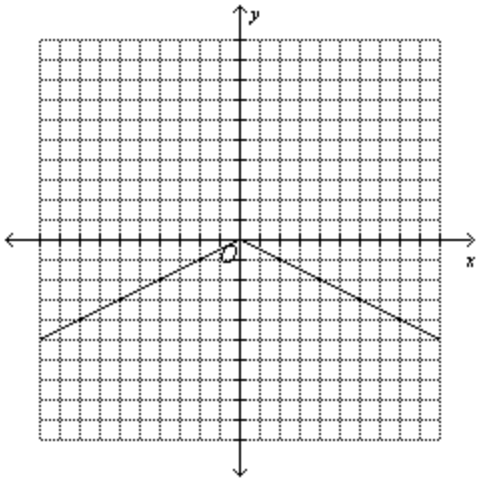
a.



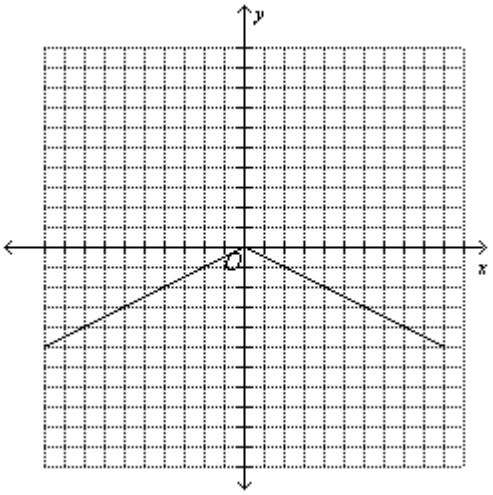
b.



c.



d.



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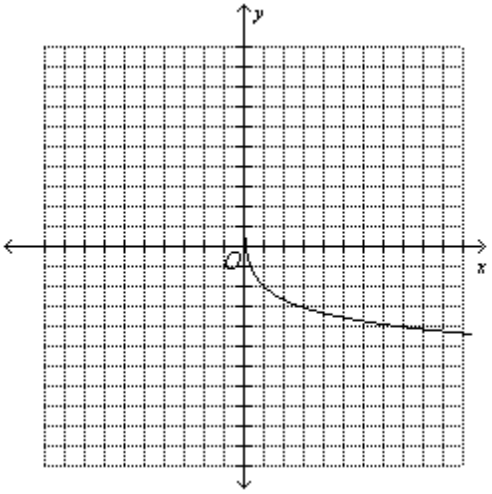
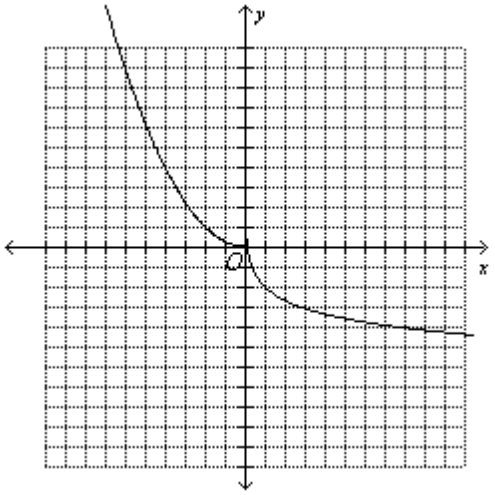
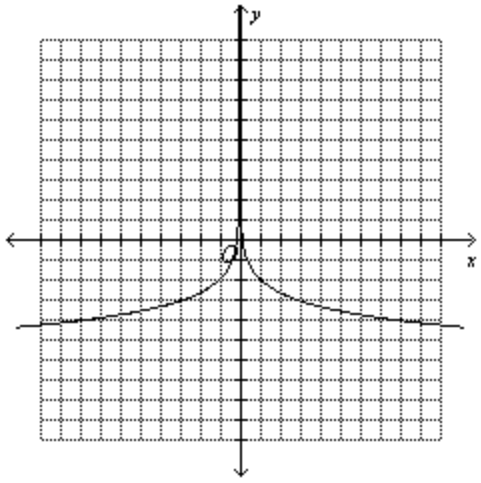
6. The graph below is a portion of a complete graph. Which graph below is the complete graph assuming it is an even function?



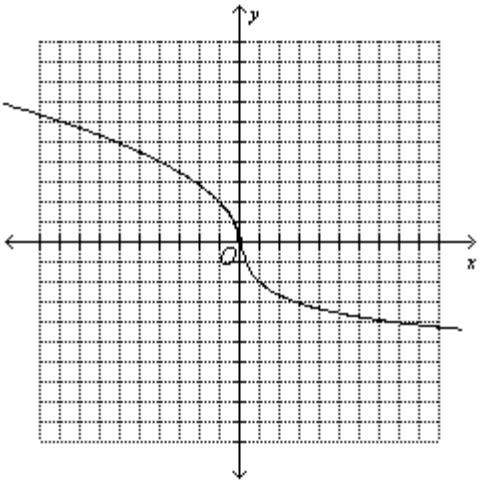
a.



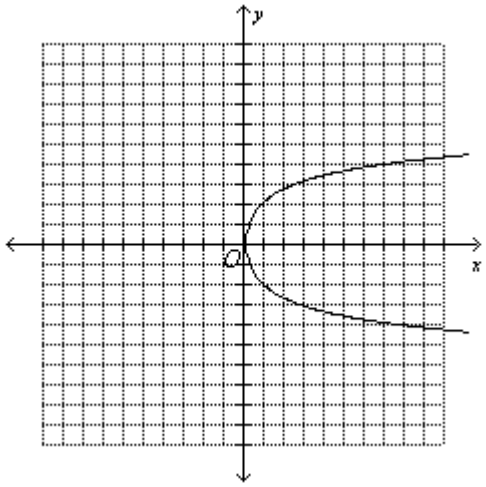
b.



c.



d.



7. Use the domain and range of each of the following relations to determine which is a function.

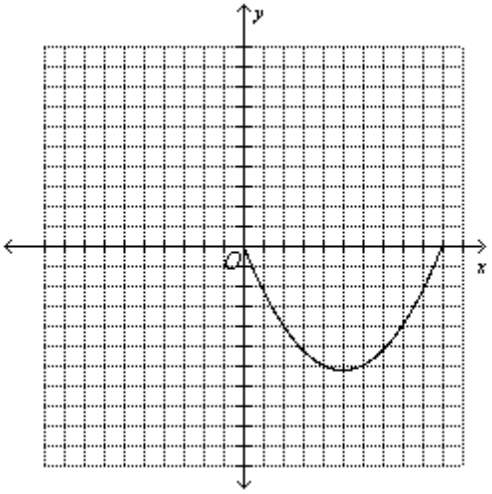
a. {(–4, 3), (–2, –1), (–4, 8)}
b. {(–4, 3), (–2, –1), (–7, 8)}
c. {–4, –2, –7, 7}
d. {(–4, 3), (–2, –1), (–2, –8), (–7, 8)}

Which statement best describes a method that can be used to sketch the graph.

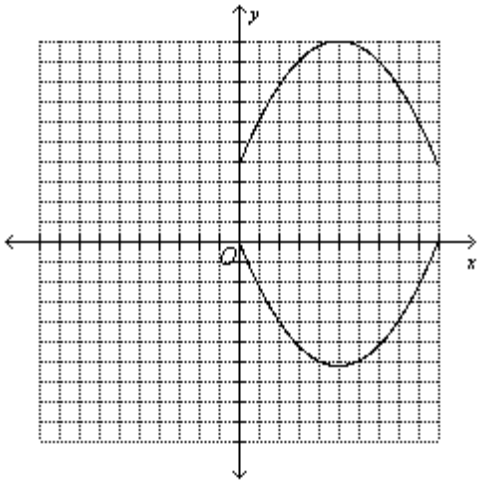
8. $y = |x + 1|$

a. Translate the graph of $y = |x|$ one unit up.
b. Translate the graph of $y = |x|$ one unit down.
c. Translate the graph of $y = |x|$ one unit left.
d. Translate the graph of $y = |x|$ one unit right.

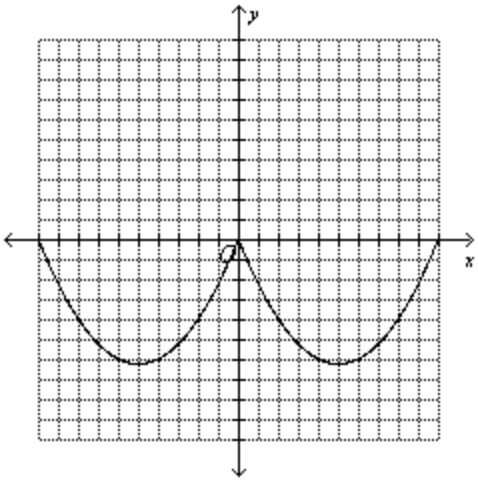
9. The graph below is a portion of a complete graph. Which graph below is the complete graph assuming it is an even function?



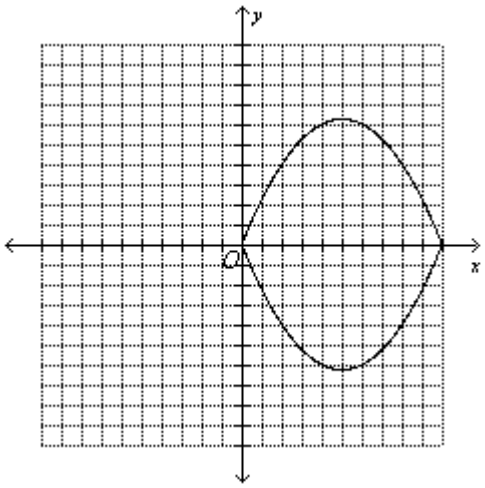
a.



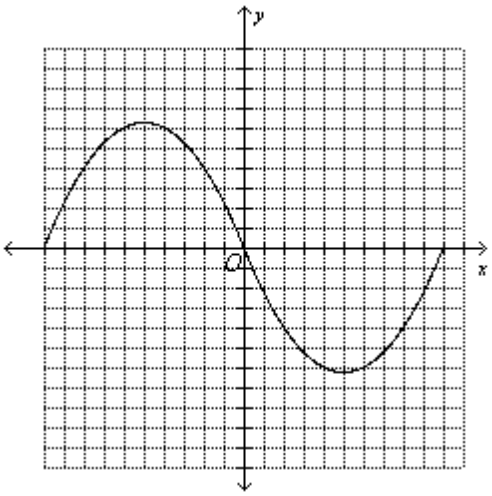
b.



c.



d.



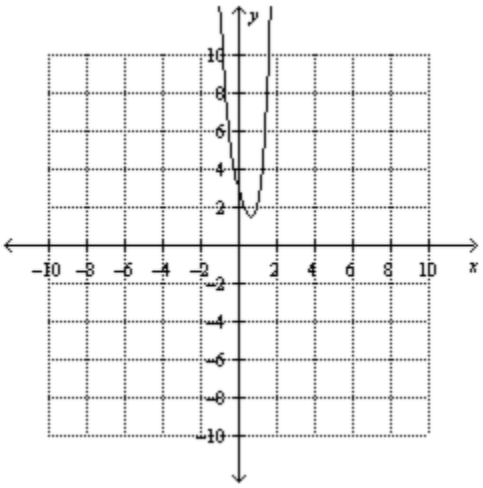
10. The graph of the equation $y = x^2 - 9$ is symmetric with respect to which of the following?

a. the line $y = x$ b. the line $y = -x + 9$
c. the x-axis d. the y-axis

11. ACME Company's expected sales can be modeled by $g(t) = t^3 - 4t^2 + 4t - 4$, where $g(t)$ is measured in thousands of dollars and t is the number of years after 2013. Find the average rate of change in expected sales from 2014 to 2020.

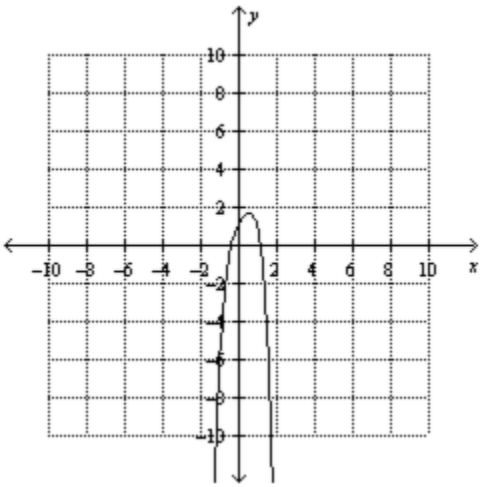
a. –$29,000 b. $29,000
c. $24,000 d. $174,000

12. Use the graph of $f(x)$ to estimate $f(1)$.



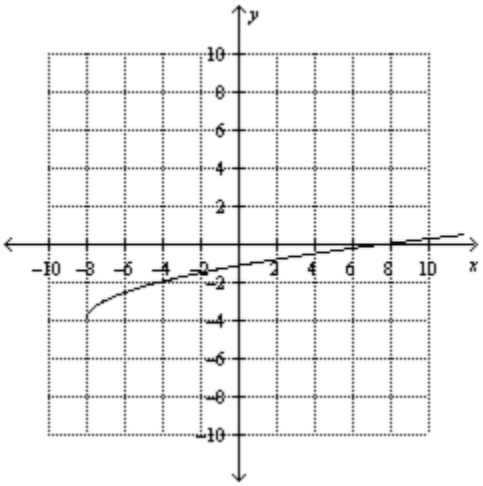
a. $f(1) = 3$ b. $f(1) = 2$
c. $f(1) = -2$ d. $f(1) = 1$

13. Use the graph of $f(x)$ to estimate $f(-1)$.



a. $f(-1) = 7$ b. $f(-1) = -8$
c. $f(-1) = -7$ d. $f(-1) = -6$

14. Use the graph below to identify the y-intercept and zeros.



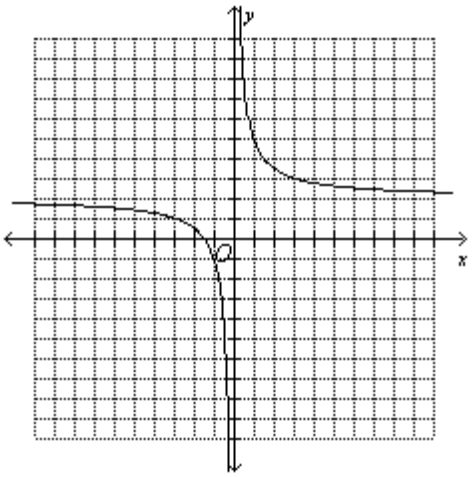
a. y-intercept: 8No y-intercept
zero: -1.17

b. y-intercept: -1.17
zeros: 8 and -24

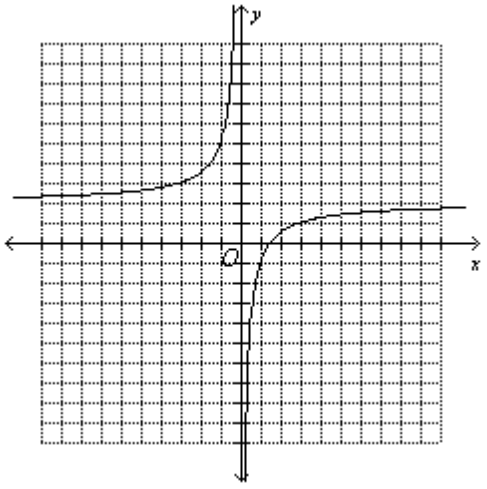
c. y-intercept: -1.17
zero: 8No zeros

d. y-intercept: -1.17
zero: -24

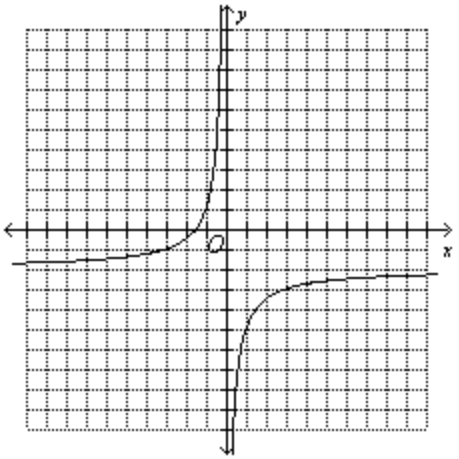
15. The graph of a function *f* is illustrated below. What is the graph of the inverse function of *f*?



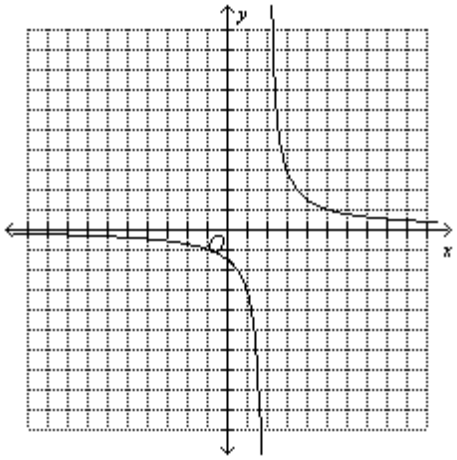
a.



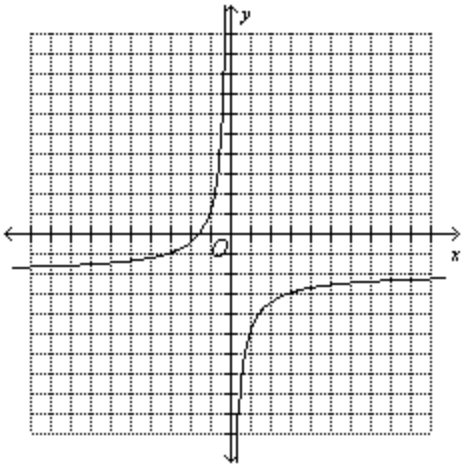
b.



c.



d.



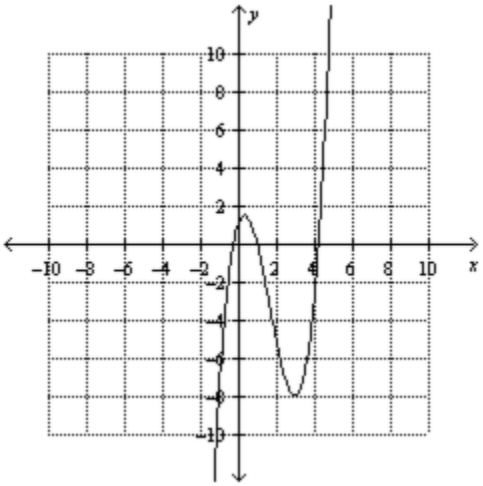
16. Find the average rate of change of $f(x) = \sqrt{x + 6}$ on [4, 9]. Round your answer to the nearest hundredth.

a. 0.14 b. 0.71
c. –0.36 d. –0.14

17. State whether the graph of $f(x) = \dfrac{x^3 + 5x^2 + 6x}{x}$ has infinite discontinuity, jump discontinuity, point discontinuity, or is continuous.

a. The function has infinite discontinuity. b. The function has point discontinuity.
c. The function has jump discontinuity. d. The function is continuous.

18. Use the graph of $f(x)$ to estimate $f(3)$.



a. $f(3) = –9$ b. $f(3) = –8$
c. $f(3) = 8$ d. $f(3) = –7$

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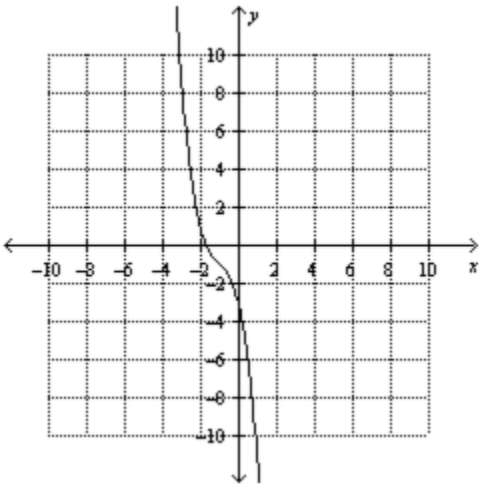
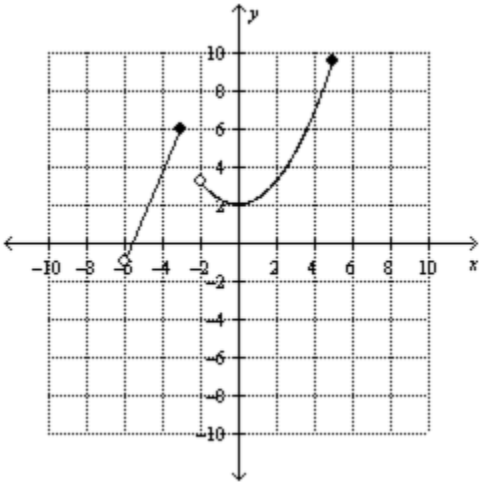
19. Use the graph of $f(x)$ to estimate $f(-2)$.



a. $f(-2) = 1$ b. $f(-2) = -1$
c. $f(-2) = 2$ d. $f(-2) = 0$

20. Use the graph below to find the domain and range.



a. D: (–6, –3], (–2, 5]
R: (–1, 9.5]

b. D: (–6, 5]
R: (–1, 9.5]

c. D: (–6, –3), (–2, 5)
R: (–1, 9.5)

d. D: [–6, –3], [–2, 5]
R: [–1, 9.5]

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