

MULTIPLE CHOICE

1. Determine which of the following points does *not* lie on the graph of $y = x^3 + 4x - 1$.

- (a) (0, -1) (b) (1, 4) (c) (-1, -4)
 (d) (3, 38) (e) None of these

2. Which of the following range settings was used to obtain the graph below?

(a)

Xmin = -8
Xmax = 6
Xscl = 2
Ymin = -3
Ymax = 3
Yscl = 1

(b)

Xmin = -3
Xmax = 3
Xscl = 1
Ymin = -8
Ymax = 6
Yscl = 1

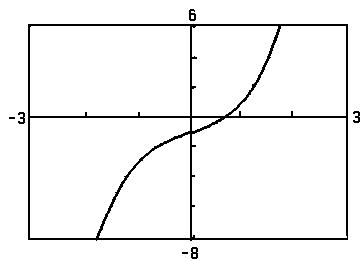
(c)

Xmin = -3
Xmax = 3
Xscl = 1
Ymin = -8
Ymax = 6
Yscl = 2

(d)

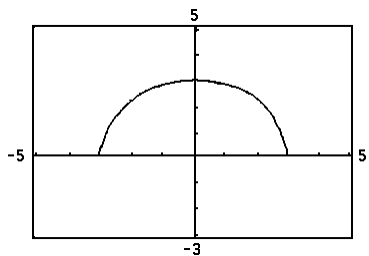
Xmin = -8
Xmax = 6
Xscl = 1
Ymin = -3
Ymax = 3
Yscl = 1

(e) None of these



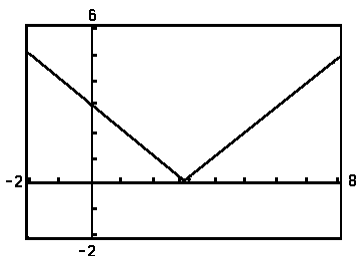
3. Match the equation with the graph.

- (a) $y = \sqrt{9 - x^2}$
 (b) $y = |x^2 - 9|$
 (c) $y = \sqrt{x^2 - 9}$
 (d) $y = (9 - x)^2$
 (e) None of these

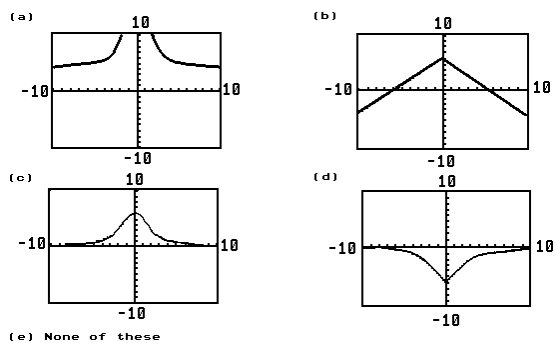


4. Match the equation with the graph.

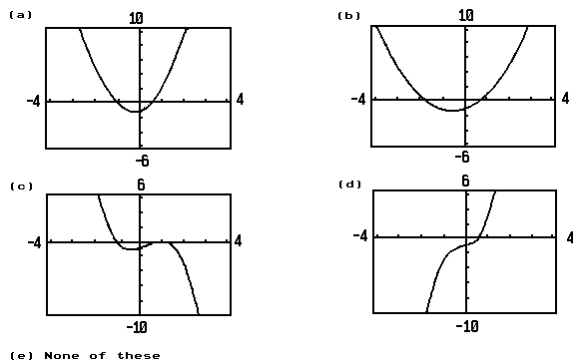
- (a) $y = \sqrt{x - 3}$
 (b) $y = |x - 3|$
 (c) $y = (x - 3)^2$
 (d) $y = x - 3$
 (e) None of these



5. Use a graphing utility to graph $y = -|x| + 6$. Use the standard viewing rectangle.

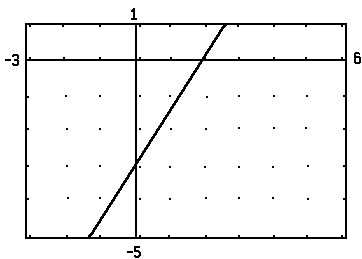


6. Use a graphing utility to graph $y = 2x^3 + x^2 + x - 1$.



7. Determine the slope of the line shown below.

- (a) $\frac{2}{3}$ (b) $-\frac{2}{3}$ (c) $\frac{3}{2}$
- (d) $-\frac{3}{2}$ (e) None of these



8. Determine the slope of the line that passes through the points $(1, 3)$ and $(-2, -2)$.

- (a) $\frac{3}{5}$ (b) $\frac{1}{3}$ (c) $\frac{5}{3}$
- (d) 1 (e) None of these

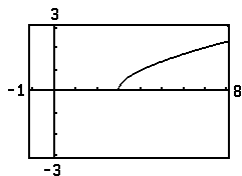
9. Find an equation of the line that passes through the point $(4, -1)$ and has a slope of $\frac{1}{2}$.

- (a) $y = \frac{1}{2}x - 1$ (b) $y = \frac{1}{2}x + 1$ (c) $y = \frac{1}{2}x + 3$
- (d) $y = \frac{1}{2}x - 3$ (e) None of these

10. Describe the graph of $6x - y = 12$.
- (a) Rises from left to right (b) Falls from left to right
 (c) Horizontal (d) Vertical
 (e) None of these
11. What is the slope of the line perpendicular to the line $y = 7$?
- (a) 0 (b) Undefined (c) $\frac{1}{7}$
 (d) $-\frac{1}{7}$ (e) None of these
12. Which of the following does not represent y as a function of x ?
- (a) $x^2 + y^2 = 16$ (b) $x^2 - 10y = 1$ (c) $x + y = 4$
 (d) $y + 7x = 4$ (e) $8y - 4x^2 = 3$
13. Given $f(x) = 9x^2 + 1$, find $f(2)$.
- (a) 19 (b) 37 (c) 12
 (d) 18 (e) None of these
14. Find the domain of the function $\{(1, 1), (2, 4), (3, 9)\}$.
- (a) $[1, 9]$ (b) $\{1, 2, 3, 4, 9\}$ (c) $\{1, 4, 9\}$
 (d) $\{1, 2, 3\}$ (e) None of these
15. Find the domain of the function $f(x) = \frac{1}{x^2 - 3x + 2}$.
- (a) $(-\infty, -2), (-2, 1), (1, \infty)$ (b) $(-\infty, 1), (1, 2), (2, \infty)$
 (c) $(-\infty, \infty)$ (d) $\left[-\infty, \frac{1}{2}\right], \left[\frac{1}{2}, \infty\right]$
 (e) None of these
16. Which of the functions fits the data?
- | | | | | | | |
|-----|----|----|---|---|---|----|
| x | -4 | -2 | 0 | 2 | 4 | 6 |
| y | 8 | 4 | 0 | 4 | 8 | 12 |
- (a) $f(x) = 2|x|$ (b) $f(x) = 2x^2$ (c) $f(x) = 2x$
 (d) $f(x) = 2\sqrt{x}$ (e) None of these

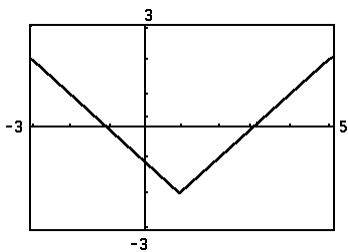
17. Find the domain of the function shown below.

- (a) $(-\infty, \infty)$ (b) $(-\infty, 3]$ (c) $(3, \infty)$
 (d) $[3, \infty)$ (e) None of these



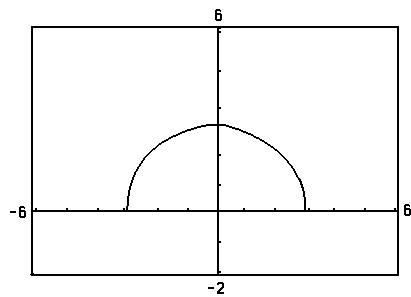
18. Find the range of the function shown below.

- (a) $(-3, 3)$ (b) $(-\infty, \infty)$ (c) $[-2, \infty)$
 (d) $(-3, 5)$ (e) None of these

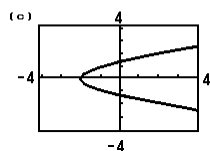
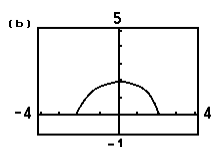
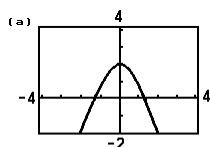


19. Use the graph shown below to find $f(0)$.

- (a) 3 (b) -3 (c) -3 and 3
 (d) 0 (e) None of these

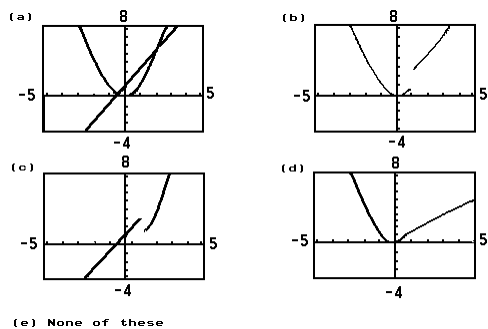


20. Use the vertical line test to determine which of the following represents y as a function of x .

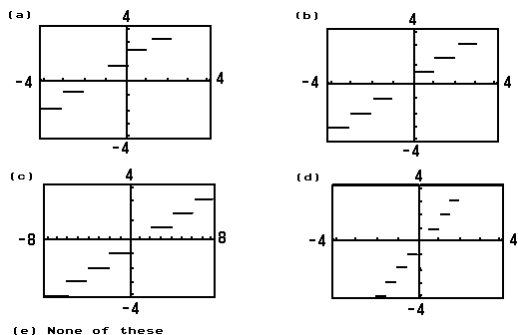


- (d) Both a and c
 (e) Both a and b

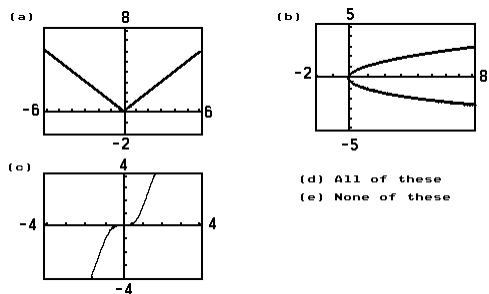
21. Use a graphing utility to graph: $f(x) = \begin{cases} 2x + 1, & x \leq 1 \\ x^2, & x > 1 \end{cases}$.



22. Use a graphing utility to graph the function $f(x) = \lceil \lceil x + 2 \rceil \rceil$.



23. Determine which of the following are graphs of even functions.

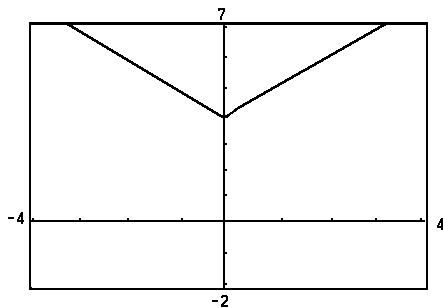


24. Describe the transformation of the graph of $f(x) = x^2$ for the graph of $g(x) = (x + 9)^2$.

- (a) Vertical shift 9 units up
- (b) Vertical shift 9 units down
- (c) Horizontal shift 9 units to the right
- (d) Horizontal shift 9 units to the left
- (e) None of these

25. The graph below is a transformation of the graph of $f(x) = |x|$. Find an equation for the function.

- (a) $g(x) = |x + 4|$ (b) $g(x) = |x| + 4$ (c) $g(x) = |x| - 4$
 (d) $g(x) = |x - 4|$ (e) None of these



26. Which sequence of transformations will yield the graph of $g(x) = (x + 1)^2 + 10$ from the graph of $f(x) = x^2$?

- (a) Horizontal shift 10 units to the right
 Vertical shift 1 unit up
 (b) Horizontal shift 1 unit to the left
 Vertical shift 10 units up
 (c) Horizontal shift 1 unit to the right
 Vertical shift 10 units up
 (d) Horizontal shift 10 units to the left
 Vertical shift 1 unit up

27. Given $f(x) = 2x - 4$ and $g(x) = 1 + 3x$, find $(f + g)(x)$.

- (a) $5x - 3$ (b) $x - 3$ (c) $-(x + 3)$
 (d) 0 (e) None of these

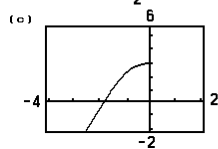
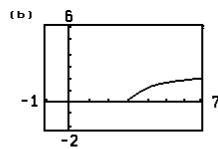
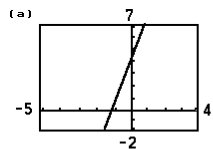
28. Given $f(x) = x^2$ and $g(x) = x + 5$, find $(g \circ f)(x)$.

- (a) $(x + 5)^2$ (b) $x^2 + 5$ (c) $x^2 + 25$
 (d) $x^2 + 5x^2$ (e) None of these

29. Which of the following is the inverse of $f(x) = 5 - x$?

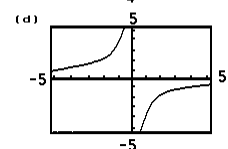
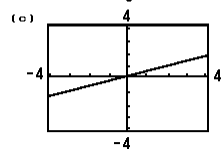
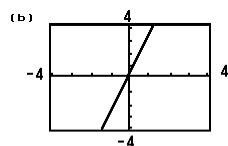
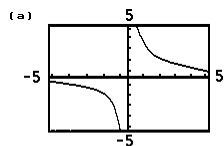
- (a) $f^{-1}(x) = x + 5$ (b) $f^{-1}(x) = x - 5$ (c) $f^{-1}(x) = \frac{1}{5 - x}$
 (d) $f^{-1}(x) = 5 - x$ (e) None of these

30. In which graph does y not represent a one-to-one function of x ?



(d) All of these are one-to-one functions of x .
 (e) None of these are one-to-one functions of x .

31. Given $f(x) = 3x$, identify the graph of $f^{-1}(x)$.



(e) None of these

OPEN-ENDED

32. Given $f(x) = \sqrt{x^2 + 2}$, find $f(-4)$.