Redraw the following graphs, and draw the graph on the same set of axes.

\[ y = -f(x) \]
2 Find the slope-intercept equation of the line determined by the points (1, -1) and (2, 3).

a. \( y = 4x + 5 \)

b. \( y = \frac{1}{4}x + \frac{5}{4} \)

c. \( y = -4x + 5 \)

d. \( y = 4x - 5 \)

e. \( y = \frac{1}{4}x - \frac{5}{4} \)

3 Use interval notation to list the values of \( x \) that satisfy the inequality.

\[
\frac{x + 3}{x - 2} \geq 0
\]

a. \([-3, 2]\)

c. \((-\infty, -3] \cup [2, \infty)\)

e. \((-\infty, 2]\)

b. \([-2, 3]\)

d. \((-\infty, -2] \cup [3, \infty)\)
Indicate on an xy-plane those points \((x, y)\) for which the statement holds.

\[-1 \leq y \leq 3\]
Indicate on an \( xy \)-plane those points \((x, y)\) for which the statement holds.

\[ y < 2 \]
Use the graph to determine the domain of the function.

Use the graph to determine the range of the function.

7 Find the distance between the points and the midpoint of the line segment joining the points.

\((-1, 4), (3, 6)\)

a. \(d = 4\sqrt{2}, (1, 2)\)

b. \(d = 2\sqrt{5}, (2, 5)\)

c. \(d = 2\sqrt{2}, (2, 2)\)

d. \(d = 4\sqrt{2}, (2, 5)\)

e. \(d = 2\sqrt{5}, (1, 5)\)
8 Use the graph of the function shown in the accompanying figure to sketch the graph.

\[
y = f(x - 1) + 1
\]
The graph of the function $f$ is given in the figure.

Determine the domain of the function.

a. $(-5, 0)$  
b. $[-5, 0]$  
c. $[-5, \infty)$  
d. $[-4, 0]$  
e. $[-\infty, 0]$
10. Indicate on an $xy$-plane those points $(x, y)$ for which the statement holds.

$4 < |x|$

11. Factor the quadratic equation.

$x^2 + 9x + 8$

a. $(x + 9)(x + 8)$

b. $(x + 8)(x + 1)$

c. $(x - 8)(x + 9)$

d. $(x - 1)(x + 8)$

e. $(x + 8)(x + 1)$
12 A rectangle is inscribed under the parabola \( y = 8 - x^2 \). Express the area of the rectangle as a function of \( x \).
13 Sketch the listed points in the same coordinate plane.

(2, 3), (-2, -3), (2, -3), (-2, 3)

a. b. c. d. e.
The graph of the function $f$ is given in the figure.

Determine the range of the function.

a. $\left[ -\frac{3}{2}, \infty \right)$

b. $\left[ -\frac{3}{2}, -\frac{1}{2} \right) \cup \left[ 0, \frac{9}{8} \right]$

c. $\left( -\infty, \frac{9}{8} \right]$

d. $[-2, 3]$

e. $\left( -\infty, -\frac{1}{2} \right] \cup [0, \infty)$
15. Indicate on an xy-plane those points \((x, y)\) for which the statement holds.

\[ y = 2 \]

- **a.**

- **b.**

- **c.**

16. Find the slope of the line.

\[ y = x - 7 \]

\[ m = \quad \]

17. Find the domain of the function.

\[ f(x) = \sqrt{x^2 - 2} \]
18 Sketch the graph of the quadratic equation.

\[ y = 2x^2 - 8x + 8 \]
Match the equation with the curve from the list below.

\[ y = -x^2 + 4 \]
20 If \( f(x) = 3x^2 + 3 \), find the following values.

\[
\begin{align*}
f(2) &= \\
f(\sqrt{3}) &= \\
f(2 + \sqrt{3}) &= \\
f(2) + f(\sqrt{3}) &= \\
f(2x) &= \\
f(1 - x) &= \\
f(x + h) &= \\
f(x + h) - f(x) &= 
\end{align*}
\]

21 Complete the square on the \( x \) and \( y \) terms to find the center and radius of the circle.

\[
x^2 + y^2 + 2y = 3
\]

Find the center.

\[
\text{center: } (0, -1)
\]

Find the radius.

\[
r = 2
\]

22 \( f(x) = x^2 - 2x + 1 \)

Find the domain of the function.

Find the range of the function.

23 \( f(x) = 8x - 5 \)

Find \( f(x + h) \).

Find \( f(x + h) - f(x) \).

Find \( \frac{f(x + h) - f(x)}{h} \) where \( h \neq 0 \).

Find the value \( \frac{f(x + h) - f(x)}{h} \) approaches as \( h \to 0 \).
24 Sketch the graph of the quadratic equation.

\[ y = (x + 2)^2 - 5 \]
25

Use the graph to determine the domain of the function.

Use the graph to determine the range of the function.

26 Find the line(s) which are parallel to the line \( y = x + 2 \).

\[ a. \ y = 6x - 9 \hspace{1cm} c. \ x - y = 8 \hspace{1cm} e. \ y = x + 8 \hspace{1cm} g. \ 8x - 8y = 1 \hspace{1cm} i. \ y = -8 \\
\hspace{1cm} b. \ y - 6x = 6 \hspace{1cm} d. \ y = 6 \hspace{1cm} f. \ y = -x + 6 \hspace{1cm} h. \ x + y = 0 \]

27 Find the domain of the function.

\[ f(x) = \sqrt{\frac{(x - 7)^2}{x^2 + 2x - 35}} \]

\[ a. \ (-\infty, -7) \cup (-7, 5) \hspace{1cm} c. \ (-7, 5) \cup (5, \infty) \hspace{1cm} e. \ (-\infty, -7) \cup (-7, 5) \cup (5, \infty) \\
\hspace{1cm} b. \ (-\infty, -7) \cup (5, \infty) \hspace{1cm} d. \ (-7, 5) \]

28 Specify any axis or origin symmetry of the graph.

<table>
<thead>
<tr>
<th>a. origin</th>
<th>b. x-axis and y-axis symmetry</th>
<th>c. x-axis symmetry</th>
<th>d. no symmetry</th>
<th>e. y-axis symmetry</th>
</tr>
</thead>
</table>
29. \( f(x) = 8x^2 + 3x + 9 \)

Find \( f(x + h) \).

Find \( f(x + h) - f(x) \).

Find \( \frac{f(x + h) - f(x)}{h} \) where \( h \neq 0 \).

Find the value \( \frac{f(x + h) - f(x)}{h} \) approaches as \( h \to 0 \).

30. If \( f(x) = \sqrt{x + 3} \), find the following.

\( f(2) = \)

\( f(0) = \)

\( f(3) = \)

\( f(6) = \)

\( f(a) = \)

\( f(7a - 1) = \)

\( f(x + h) = \)

\( f(x + h) - f(x) = \)

31. Determine whether the curve represents the graph of a function.

![Graph of a function](image)

a. yes  
b. no

32. Find the line(s) which are perpendicular to the line \( y = 3x + 3 \).

a. \( y = -4 \)  
c. \( x = -3 \)  
e. \( x + 3y = -1 \)  
g. \( x - 5y = -5 \)

b. \( y = 4x + 5 \)  
d. \( y = -4x - 7 \)  
f. \( y = 5x \)
33 Sketch the graph of the quadratic equation.

\[ y = (x - 2)^2 \]
Indicate on an \( xy \)-plane those points \((x, y)\) for which the statement holds.

- \(2 \leq x \leq 3\) and \(2 \leq y \leq 3\)
Find the domain of each function.

\[ f(x) = 8 - x \]
\[ f(x) = \frac{1}{8 - x} \]
\[ f(x) = \sqrt{8 - x} \]
\[ f(x) = \frac{1}{\sqrt{8 - x}} \]

Specify any axis or origin symmetry of the graph that is shown.

37 \[ f(x) = x^2 + 8x \]

Determine the formula for \( f(-x) \).

a. \( f(-x) = x^2 - 8x \)

b. \( f(-x) = x^2 + 8x \)

c. \( f(-x) = -x^2 + 8x \)

d. \( f(-x) = x - 8x^2 \)

e. \( f(-x) = -x^2 - 8x \)
Sketch the graph of the quadratic equation.

\[ y = x^2 + 4 \]
Find the center and radius of the circle, and sketch its graph.

\[ x^2 + (y - 5)^2 = 16 \]

a. The center is \((-5,0)\) and the radius is 4.

d. The center is \((0,-5)\) and the radius is 4.

b. The center is \((0,5)\) and the radius is 4.

e. The center is \((5,0)\) and the radius is 4.

c. The center is \((0,0)\) and the radius is 9.
Use the quadratic formula to find any $x$-intercepts of the parabola.

\[ y = 4x^2 - 16x + 13 \]

a. \( x = 4 - \frac{\sqrt{3}}{2}, 4 + \frac{\sqrt{3}}{2} \)

c. \( x = \frac{4 - \sqrt{3}}{16}, \frac{4 + \sqrt{3}}{16} \)

e. \( x = -\frac{\sqrt{3}}{2}, \frac{4 + \sqrt{3}}{2} \)

b. \( x = \frac{4 - \sqrt{3}}{2}, \frac{4 + \sqrt{3}}{2} \)

d. \( x = -\frac{\sqrt{3}}{2}, \frac{\sqrt{3}}{2} \)

Express the quadratic in standard form. Find any axis intercepts. Find the maximum or minimum value of the function.

\[ f(x) = x^2 + 4x + 9 \]

a. Standard form: \((x + 2)^2 + 5\)
Axis intercepts: \( y = 9 \)
Minimum: 5 at \( x = -2 \)

d. Standard form: \(- (x + 2)^2 + 5\)
Axis intercepts: \( x = 9 \)
Maximum: 2 at \( x = 5 \)

b. Standard form: \((x + 2)^2 + 5\)
Axis intercepts: \( y = -9, y = 2 \)
Minimum: -5 at \( x = 2 \)

e. Standard form: \(- (x - 2)^2 + 5\)
Axis intercepts: \( x = 5, x = 2 \)
Minimum: -5 at \( x = 2 \)

c. Standard form: \((x - 2)^2 - 5\)
Axis intercepts: \( y = 5, x = -4 \)
Maximum: 2 at \( x = 5 \)

Determine any axis intercepts and describe any axis or origin symmetry.

\[ y = x^2 - 4 \]