1.

Find the distance $d(P_1, P_2)$ between the points P_1 and P_2.

$P_1 = (4, -4)$

$P_2 = (5,3)$

$d(P_1, P_2) = \boxed{}$

(Simplify your answer. Type an exact answer, using radicals as needed.)

2.

Find the midpoint of the line segment joining the points P_1 and P_2.

$P_1 = (-4,2); P_2 = (5,0)$

$M = (x,y) = \boxed{}$ (Type an ordered pair.)

3.

Determine whether the given points are on the graph of the equation.

Equation: $y^2 = x^2 + 100$

Points: $(0,10); (10,0); (-10,0)$

Which of the given points are on the graph of the equation?

$\boxed{}$

(Type an ordered pair. Use a comma to separate answers as needed. Type N if there is no solution.)

4.

Find the intercepts and graph the equation by plotting points.

$$y = -5x^2 + 5$$
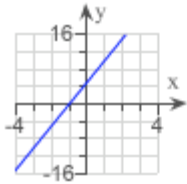
Find all the x-intercepts.

☐

(Use a comma to separate answers as needed. Type N if there is no solution.)
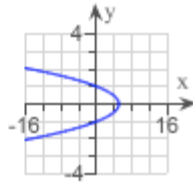
Find all the y-intercepts.

☐

(Use a comma to separate answers as needed. Type N if there is no solution.)
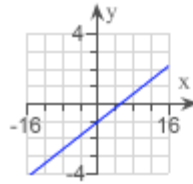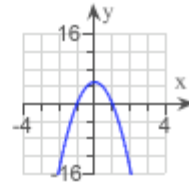
Choose the correct graph below.

○ A.

○ B.

○ C.

○ D.

5.

For the given equation, list the intercepts and test for symmetry.

$$x^2 + y - 25 = 0$$

What are the intercept(s)?

☐

(Type an ordered pair. Use a comma to separate answers as needed. Type N if there are no intercepts.)

Is the graph of the equation symmetric with respect to the x-axis?

○ Yes
○ No

Is the graph of the equation symmetric with respect to the y-axis?

○ Yes
○ No

Is the graph of the equation symmetric with respect to the origin?

○ Yes
○ No

6.

Plot the pair of points and determine the slope of the line containing them. Graph the line.

$(-1,3); (3,-3)$

What is the slope of the line containing the points $(-1,3)$ and $(3,-3)$?

☐

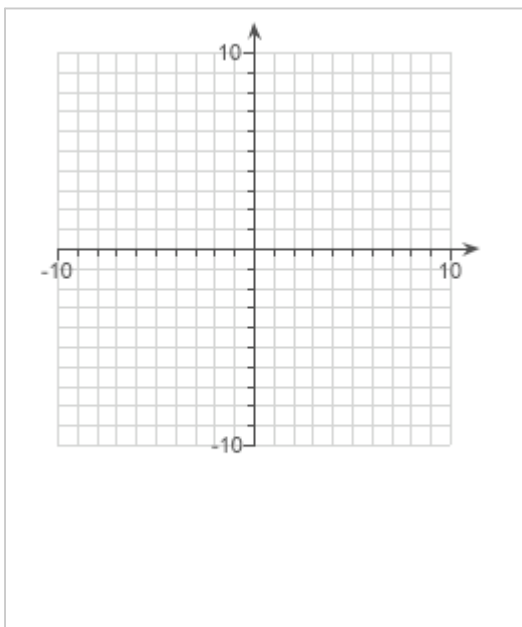(Type an integer or a fraction. Type N if the slope is undefined.)

Use the graphing tool to graph the line. Use the two given points when drawing the line.

Click to enlarge graph
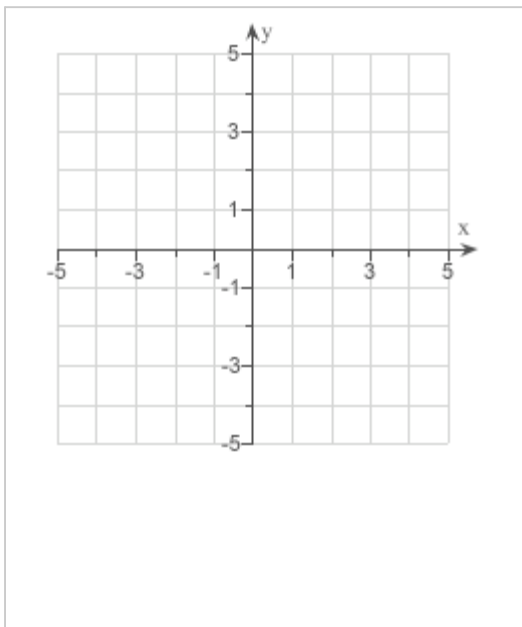
7.

Graph the line that contains the point $(-4,-1)$ and has a slope of $\dfrac{1}{3}$.

Use the graphing tool to graph the line. Use the given point when drawing the line.

Click to enlarge graph

8. Find an equation for the line with the given properties. Express the equation in slope-intercept form.

   Containing the points $P = (-3, -3)$ and $Q = (-1, -2)$

   What is the equation of the line?

   ☐

   (Type your answer in slope-intercept form. Use integers or fractions for any numbers in the equation.)

9. Find the equation of the line that has the given properties. Express the equation in slope-intercept form.

   Slope $= -2$; y-intercept $= 4$

   What is the equation of the line?

   ☐

   (Type your answer in slope-intercept form.)

10. Find the equation of the line that contains the point $(3, -1)$ and has a slope that is undefined.

    What is the equation of the line?

    ○ A. $y = 3$ ○ B. $x = -1$
    ○ C. $x = 3$ ○ D. $y = -1$

11. Find an equation for the line with the given properties.

    Parallel to the line $5x - y = -10$; containing the point $(0,0)$

    $y =$ ☐ (Type your answer in slope-intercept form.)

12. Find the slope and y-intercept of the line. Graph the line.
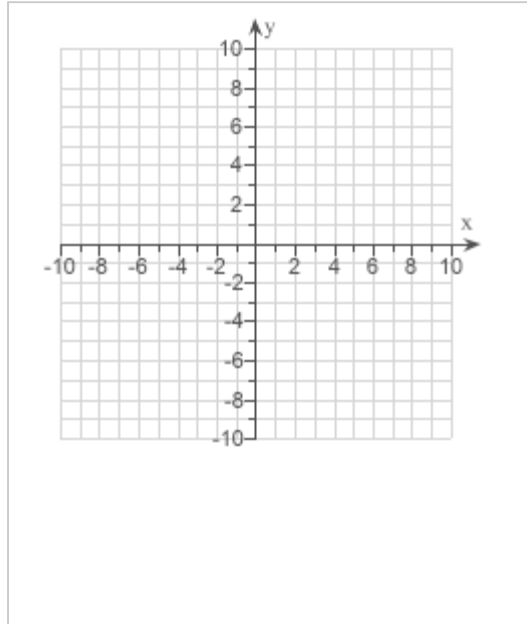
$$7x - 4y = 28$$

The slope is ☐.
(Simplify your answer. Type N if the slope is undefined.)

The y-intercept is ☐.
(Simplify your answer. Type N if there is no y-intercept.)

Use the graphing tool to graph the line. Use the slope and y-intercept when drawing the line.

Click to enlarge graph

13. For the function f defined by $f(x) = \dfrac{4x + 7}{5x - 7}$, find the following values.

(a) $f(-4) = \boxed{}$

(b) $f(-x) = \boxed{}$

(c) $-f(x) = \boxed{}$

(d) $f(x + h) = \boxed{}$

14. Find the domain of the function.

$$g(x) = \frac{7x}{x^2 - 36}$$

The domain is ☐.
(Type your answer in interval notation.)

15.

For the given functions f and g, find the specified value of the following functions and state the domain of each one.

$$f(x) = x - 8; \; g(x) = 3x^2$$

(a) $(f+g)(1) =$ ☐

What is the domain of $f+g$?

○ $\{x|x \geq 0\}$
○ $\{x|x \text{ is any real number}\}$
○ $\{x|x \geq 8\}$
○ $\{x|x \neq 8 \text{ and } x \neq 0\}$

(b) $(f \cdot g)(5) =$ ☐

What is the domain of $f \cdot g$?

○ $\{x|x \text{ is any real number}\}$
○ $\{x|x \geq 8\}$
○ $\{x|x \neq 8 \text{ and } x \neq 0\}$
○ $\{x|x \geq 0\}$

16.

Determine whether the graph below is that of a function by using the vertical-line test. If it is, use the graph to find
(a) its domain and range.
(b) the intercepts, if any.
(c) any symmetry with respect to the x-axis, y-axis, or the origin.
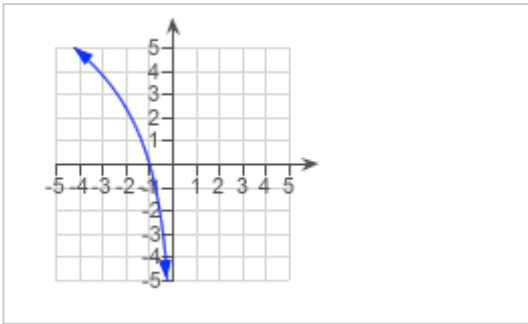
Is the graph that of a function?

○ Yes
○ No

What are the domain and range of the function?

The domain is ☐ .
(Type your answer in interval notation.)

The range is ☐ .
(Type your answer in interval notation.)

List the x-intercept(s), if any, of the graph of the function.

x-intercept(s): ☐
(Use a comma to separate answers as needed. Type N if there is no solution.)

Determine if the graph is symmetrical.

○ It is symmetrical with respect to the x-axis.
○ It is symmetrical with respect to the y-axis.
○ It is symmetrical with respect to the origin.
○ The graph is not symmetrical.

17.

Answer the questions about the following function.

$$f(x) = 3x^2 - x - 2$$

(a) Is the point $(2,8)$ on the graph of f?

(b) If x = -1, what is f(x)? What point is on the graph of f?

(c) If f(x) = -2, what is x? What point(s) are on the graph of f?

(d) What is the domain of f?

(e) List the x-intercept(s), if any, of the graph of f.

(f) List the y-intercept, if any, of the graph of f.

(a) Is the point $(2,8)$ on the graph of f?

○ Yes
○ No

(b) If x = -1, what is f(x)?

f(x) = ☐

What point is on the graph of f?

☐
(Type an ordered pair.)

(c) If f(x) = -2, what is x?

x = ☐
(Use a comma to separate answers as needed.)

What point(s) are on the graph of f?

☐
(Type an ordered pair. Use a comma to separate answers as needed.)

(d) What is the domain of f?

The domain is ☐.
(Type R if the answer is all real numbers.)

(e) List the x-intercept(s), if any, of the graph of f.
x-intercept(s): ☐
(Use a comma to separate answers as needed. Type N if there is no solution.)

(f) List the y-intercept, if any, of the graph of f.

y-intercept(s): ☐
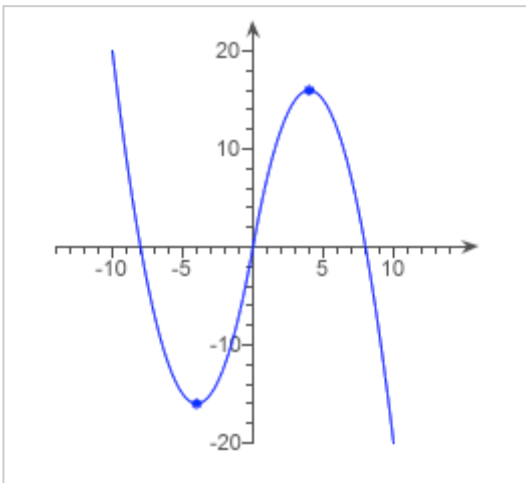(Use a comma to separate answers as needed. Type N if there is no solution.)

18.

List the intervals on which f is increasing.

☐
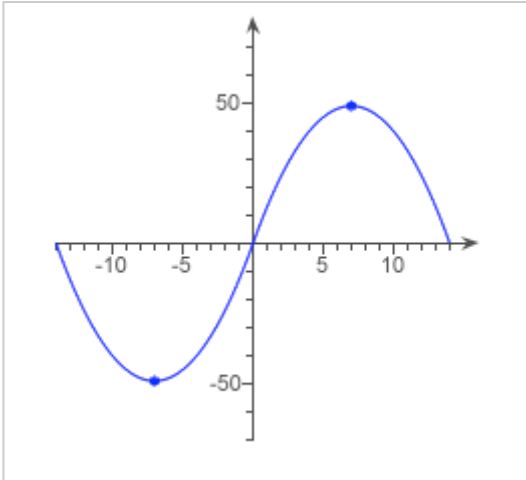
(Use commas to separate answers if necessary.)

19.

Use the graph of the function f given below to answer the questions.

If there is a local maximum at $x = 4$, what is it?

$y = $ ☐
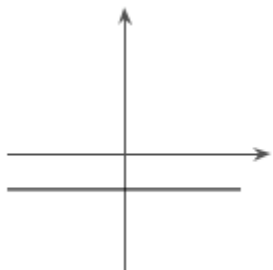
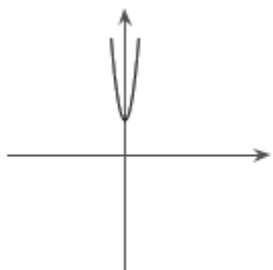(Type N if there is no local maximum at the given point.)

20. Choose whether the graph below most resembles the graph of a constant function, a linear function, a square function, or a cube function.

- ○ Constant function
- ○ Square function
- ○ Cube function
- ○ Linear function

21. Choose whether the graph below most resembles the graph of a constant function, a linear function, a square function, or a cube function.

- ○ Square function
- ○ Linear function
- ○ Cube function
- ○ Constant function

22.

Choose whether the graph below most resembles the graph of a square root function, a cube root function, a reciprocal function, or an absolute value function.
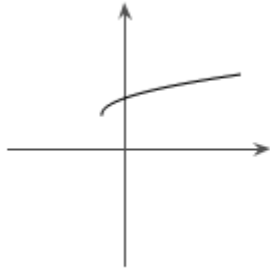
- ○ Absolute value function
- ○ Square root function
- ○ Reciprocal function
- ○ Cube root function

23.

Sketch the graph of the function. Be sure to label three points on the graph.
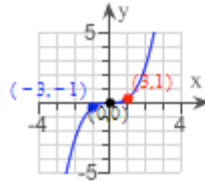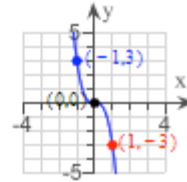
$$f(x) = 3x^3$$
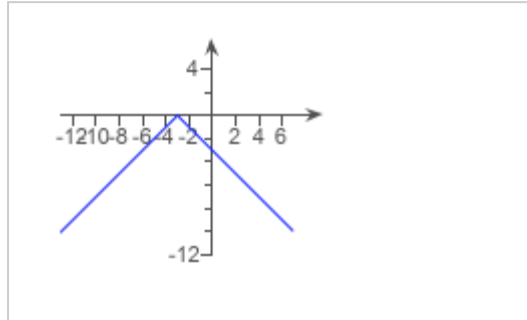
Choose the correct graph below.
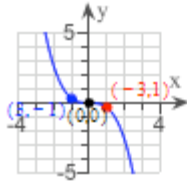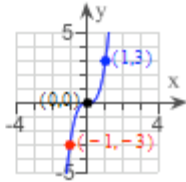
○ A.

○ B.

○ C.

○ D.

24. Choose the function that matches the given graph.

- ○ $y = -|x+3|$
- ○ $y = -|x|+3$
- ○ $y = |x-3|$
- ○ $y = -(x+3)^2$

25. Write the function whose graph is the graph of $y=|x|$, but is shifted to the left 8 units.

$y = \boxed{}$

26. Find the function that is finally graphed after the following transformations are applied to the graph of $y = \sqrt{x}$ in the order listed.

   (1) Reflect about the $x-$ axis
   (2) Shift up 6 units
   (3) Shift left 7 units
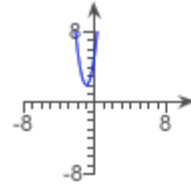
$y = \boxed{}$

27.

Graph the function using the techniques of shifting, compressing, stretching, and/or reflecting. Start with the graph of the basic function shown below.
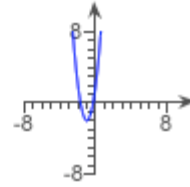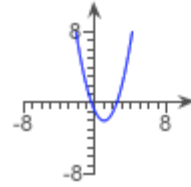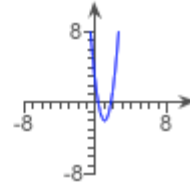
$$f(x) = 4(x-1)^2 - 2$$
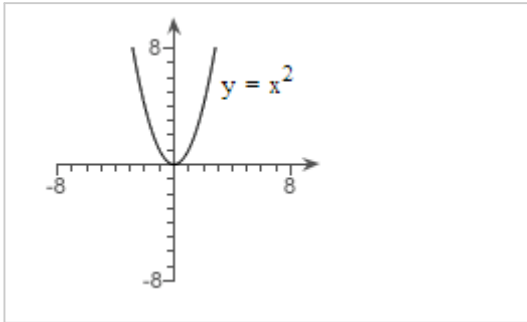
$y = x^2$

A.

B.

C.

D.

1. $5\sqrt{2}$
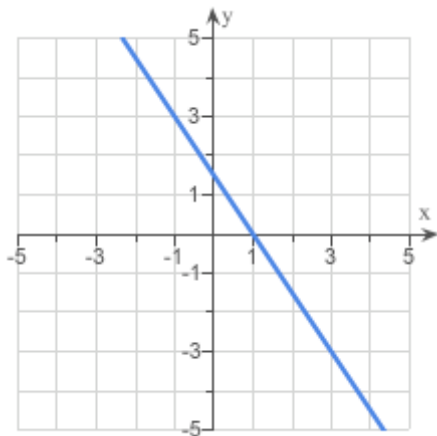
2. $\left(\dfrac{1}{2}, 1\right)$

3. $(0, 10)$

4. $1, -1$
    5
    D

5. $(5, 0), (-5, 0), (0, 25)$
    the second choice
    the first choice
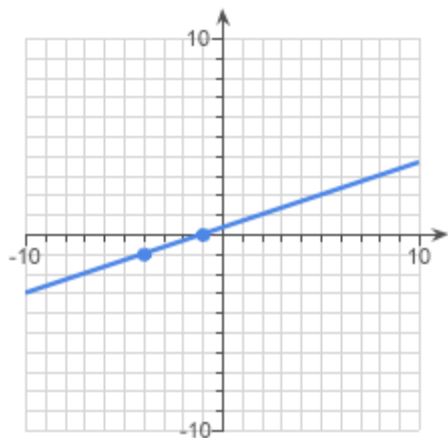   the second choice

6. $-\dfrac{3}{2}$

7.

8.　　$y = \dfrac{1}{2}x - \dfrac{3}{2}$

9.　　$y = -2x + 4$

10.　　C

11.　　$5x$

12.　　$\dfrac{7}{4}$
-7
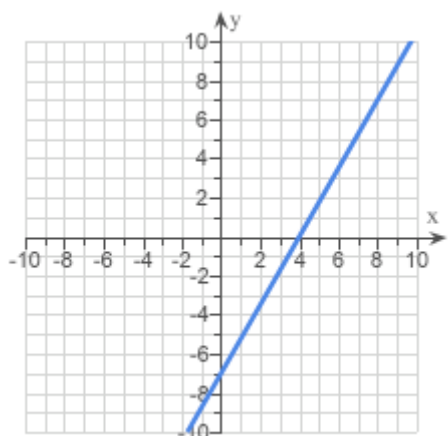
13. $$\dfrac{\dfrac{\dfrac{1}{3}}{4x-7}}{5x+7}$$
$$-\dfrac{\dfrac{4x+7}{5x-7}}{4x+4h+7}$$
$$\overline{5x+5h-7}$$

14. $(-\infty, -6) \cup (-6, 6) \cup (6, \infty)$

15. -4
the second choice
-225
the first choice

16. the first choice
$(-\infty, 0)$
$(-\infty, \infty)$
-1
the fourth choice

17. the first choice
2
$(-1, 2)$
$0, \dfrac{1}{3}$
$(0, -2), \left(\dfrac{1}{3}, -2\right)$
R
$1, -\dfrac{2}{3}$
-2

18. $(-7, 7)$

19. 16

20. the first choice

21. the first choice

22. the second choice

23.   B

24.   the first choice

25. $|x + 8|$

26. $-\sqrt{x + 7} + 6$

27.   D