

Name _____

Determine whether the equation defines y as a function of x .

1) $y = \frac{1}{x}$

2) $y^2 = 5 - x^2$

Find the value for the function.

3) Find $f(-x)$ when $f(x) = \frac{x}{x^2 + 3}$.

4) Find $f(2x)$ when $f(x) = \sqrt{8x^2 - 5x}$.

Find the domain of the function.

5) $g(x) = \frac{3x}{x^2 - 64}$

6) $\frac{x}{\sqrt{x-2}}$

For the given functions f and g , find the requested function and state its domain.

7) $f(x) = 6x - 3$; $g(x) = 8x - 4$
Find $f - g$.

Solve the problem.

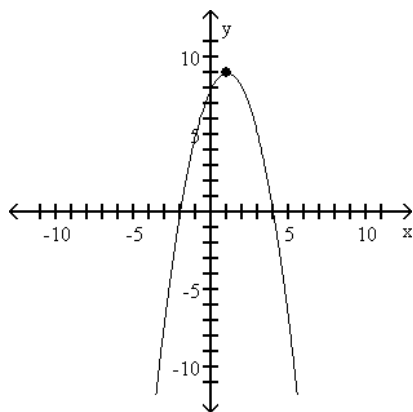
8) Find $(fg)(-3)$ when $f(x) = x + 5$ and $g(x) = 5x^2 + 15x - 3$.

Find and simplify the difference quotient of f , $\frac{f(x+h) - f(x)}{h}$, $h \neq 0$, for the function.

9) $f(x) = x^2 + 4x + 8$

Determine whether the graph is that of a function. If it is, use the graph to find its domain and range, the intercepts, if any, and any symmetry with respect to the x -axis, the y -axis, or the origin.

10)



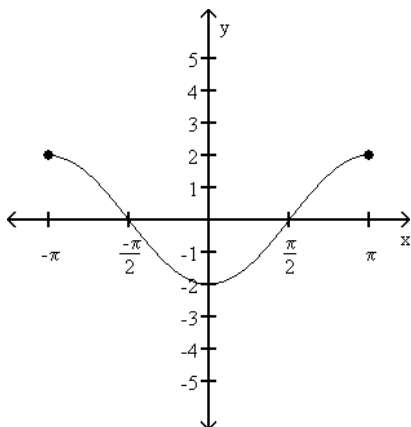
Answer the question about the given function.

11) Given the function $f(x) = -4x^2 - 8x + 7$, is the point $(-2, -1)$ on the graph of f ?

12) Given the function $f(x) = \frac{x^2 + 4}{x + 5}$, list the y -intercept, if there is one, of the graph of f .

The graph of a function is given. Decide whether it is even, odd, or neither.

13)

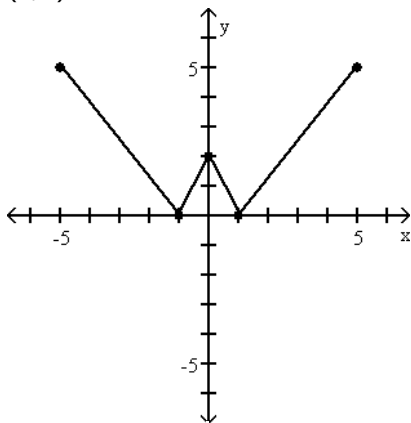


Determine algebraically whether the function is even, odd, or neither.

14) $f(x) = 5x^3 - 3$

The graph of a function is given. State the intervals where the function is increasing, decreasing, or constant. Find the numbers, if any, at which f has a local minimum and/or local maximum. What are the local minima and/or maxima?

15) $(0, 1)$



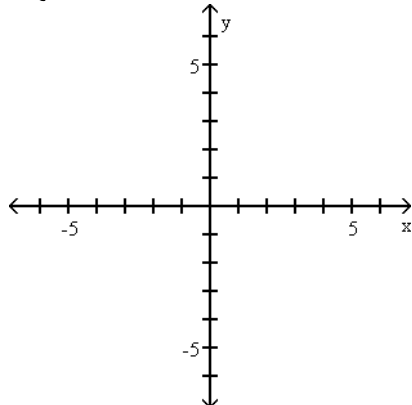
Find the average rate of change for the function between the given values.

16) $f(x) = x^2 + 2x$; from 4 to 9

Graph the function.

17)

$$f(x) = \begin{cases} -x + 3 & \text{if } x < 2 \\ 2x - 3 & \text{if } x \geq 2 \end{cases}$$

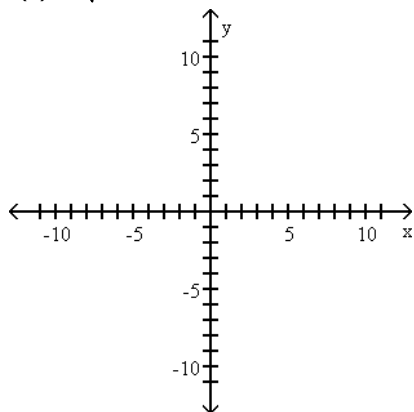


Write an equation that results in the indicated translation.

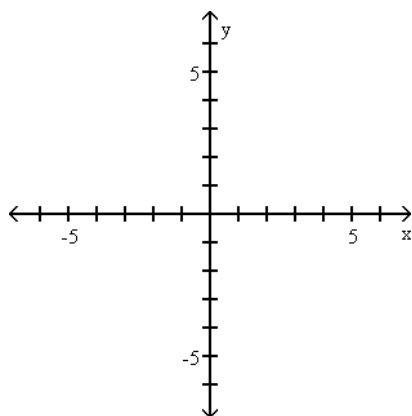
18) The absolute value function, shifted 9 units to the left

Graph the function by starting with the graph of the basic function and then using the techniques of shifting, compressing, stretching, and/or reflecting.

19) $f(x) = \sqrt{x + 4} - 2$



20) $f(x) = \frac{1}{4}x^2$

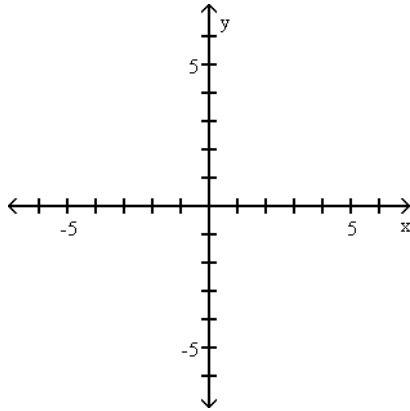


Find the function.

- 21) Find the function that is finally graphed after the following transformations are applied to the graph of $y = \sqrt{x}$.
The graph is shifted down 2 units, reflected about the x-axis, and finally shifted right 9 units.

Graph the function by starting with the graph of the basic function and then using the techniques of shifting, compressing, stretching, and/or reflecting.

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



Solve the problem.

- 23) A rectangular sign is being designed so that the length of its base, in feet, is 20 feet less than 4 times the height, h . Express the area of the sign as a function of h .