

Name \_\_\_\_\_

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

**Find the domain and range of the function.**

1)  $F(t) = t^2 + 9$

A)  $D: (-\infty, \infty), R: [9, \infty)$

C)  $D: [0, \infty), R: (-\infty, 9]$

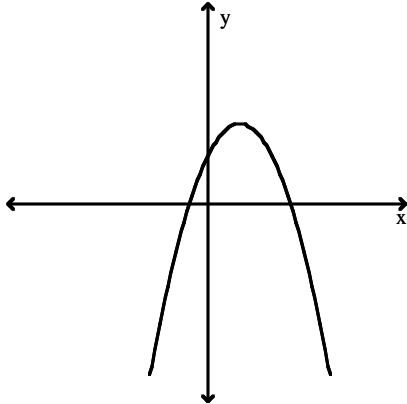
B)  $D: [-81, \infty), R: [9, \infty)$

D)  $D: (-\infty, \infty), R: (-\infty, \infty)$

1) \_\_\_\_\_

**Determine whether or not the graph is a graph of a function of x.**

2)

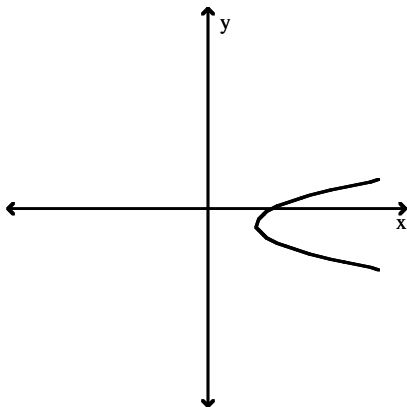


A) Function

B) Not a function

2) \_\_\_\_\_

3)



A) Function

B) Not a function

3) \_\_\_\_\_

**Find the formula for the function.**

4) Express the length  $d$  of a square's diagonal as a function of its side length  $x$ .

A)  $d = x$

B)  $d = x\sqrt{3}$

C)  $d = 2x$

D)  $d = x\sqrt{2}$

4) \_\_\_\_\_

5) A point  $P$  in the first quadrant lies on the graph of the function  $f(x) = x^2$ . Express the slope of the line joining  $P$  to the origin as a function of  $x$ .

A)  $m = \frac{2}{x}$

B)  $m = x$

C)  $m = 2x$

D)  $m = \frac{1}{x}$

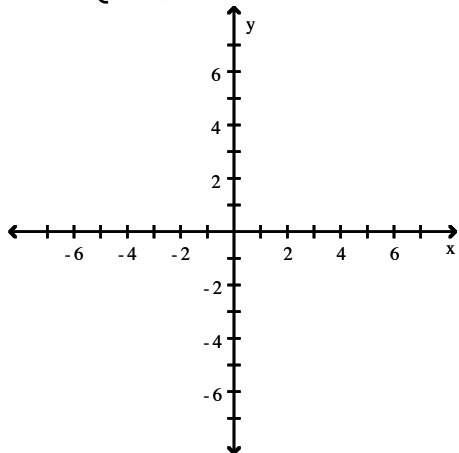
5) \_\_\_\_\_

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Graph the function.

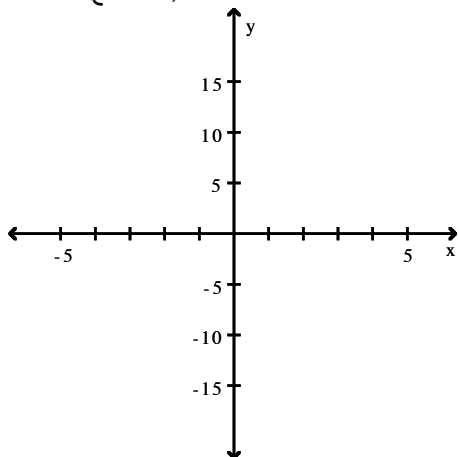
$$6) g(x) = \begin{cases} -1 & x \leq 0 \\ x - 3, & x > 0 \end{cases}$$

6) \_\_\_\_\_



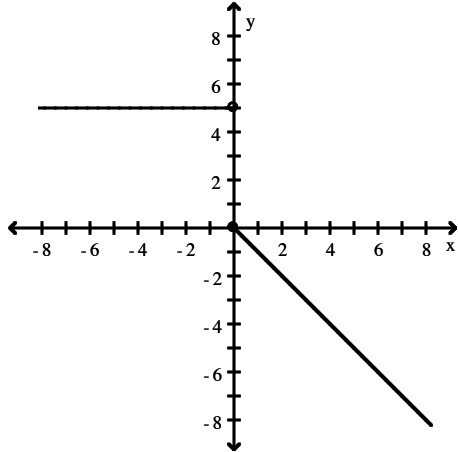
$$7) f(x) = \begin{cases} 5x + 2, & x < -2 \\ x, & -2 \leq x \leq 3 \\ 4x - 1, & x > 3 \end{cases}$$

7) \_\_\_\_\_



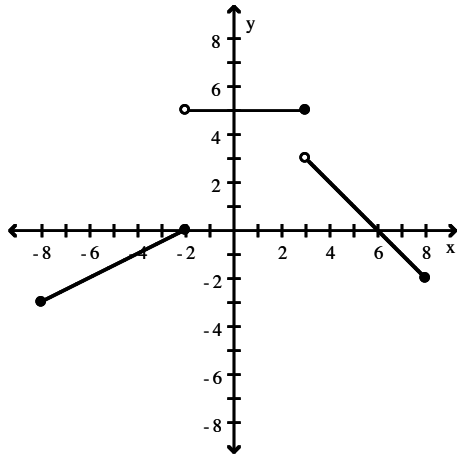
Find a formula for the function graphed.

8)



8) \_\_\_\_\_

9)

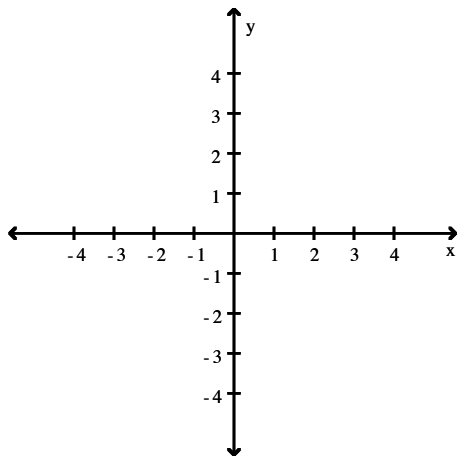


9) \_\_\_\_\_

Graph the function. Determine the symmetry, if any, of the function.

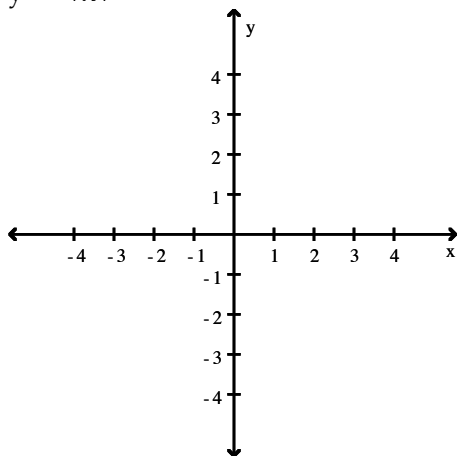
10)  $y = \frac{1}{x^3}$

10) \_\_\_\_\_



11)  $y = -|x|$

11) \_\_\_\_\_



**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

**Determine if the function is even, odd, or neither.**

12)  $f(x) = 4x^2 - 3$  12) \_\_\_\_\_  
 A) Even B) Odd C) Neither

13)  $f(x) = 8x^4 + 4x - 8$  13) \_\_\_\_\_  
 A) Even B) Odd C) Neither

14)  $f(x) = 9x^5 + 9x^3$  14) \_\_\_\_\_  
 A) Even B) Odd C) Neither

**Solve the problem.**

15) If  $f(x) = 7x + 9$  and  $g(x) = 5x - 1$ , find  $f(g(x))$ . 15) \_\_\_\_\_  
 A)  $35x + 2$  B)  $35x + 16$  C)  $35x + 44$  D)  $35x + 8$

16) If  $f(x) = \frac{1}{x}$  and  $g(x) = 6x^6$ , find  $g(f(x))$ . 16) \_\_\_\_\_  
 A)  $\frac{1}{x^6}$  B)  $\frac{1}{6x^6}$  C)  $\frac{6}{x^6}$  D)  $\frac{6}{x}$

17) If  $f(x) = -4x + 4$  and  $g(x) = 2x^2 - 6x - 1$ , find  $g(f(9))$ . 17) \_\_\_\_\_  
 A) -424 B) 152 C) 2239 D) 127

18) If  $f(x) = \sqrt{x}$ ,  $g(x) = \frac{x}{3}$ , and  $h(x) = 3x + 9$ , find  $f(g(h(x)))$ . 18) \_\_\_\_\_  
 A)  $3\sqrt{3x + 9}$  B)  $\sqrt{3x + 3}$  C)  $\sqrt{3x + 9}$  D)  $\sqrt{x + 3}$

Express the given function as a composite of functions  $f$  and  $g$  such that  $y = f(g(x))$ .

19)  $y = \frac{1}{x^2 - 6}$

19) \_\_\_\_\_

A)  $f(x) = \frac{1}{x^2}, g(x) = -\frac{1}{6}$

B)  $f(x) = \frac{1}{6}, g(x) = x^2 - 6$

C)  $f(x) = \frac{1}{x^2}, g(x) = x - 6$

D)  $f(x) = \frac{1}{x}, g(x) = x^2 - 6$

20)  $y = (-9x + 13)^3$

20) \_\_\_\_\_

A)  $f(x) = -9x + 13, g(x) = x^3$

B)  $f(x) = (-9x)^3, g(x) = 13$

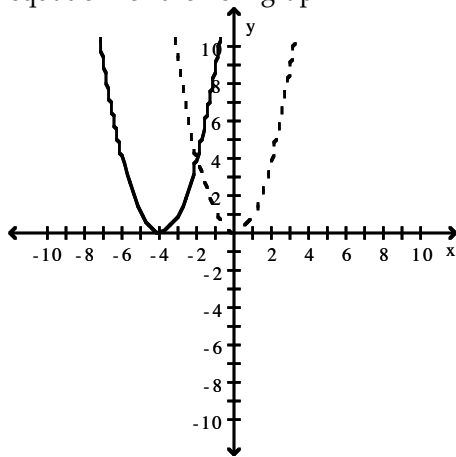
C)  $f(x) = -9x^3, g(x) = x + 13$

D)  $f(x) = x^3, g(x) = -9x + 13$

Solve the problem.

21) The accompanying figure shows the graph of  $y = x^2$  shifted to a new position. Write the equation for the new graph.

21) \_\_\_\_\_



A)  $y = (x - 4)^2$

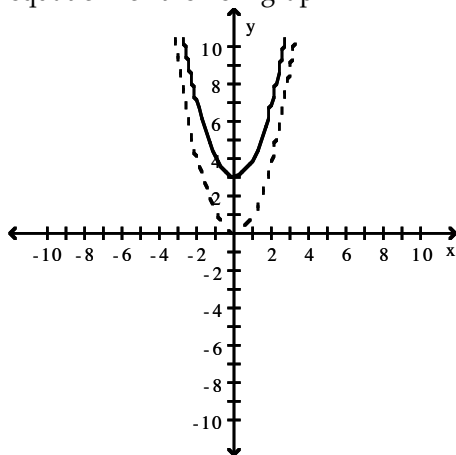
B)  $y = x^2 - 4$

C)  $y = (x + 4)^2$

D)  $y = x^2 + 4$

22) The accompanying figure shows the graph of  $y = x^2$  shifted to a new position. Write the equation for the new graph.

22) \_\_\_\_\_



A)  $y = (x - 3)^2$

B)  $y = x^2 + 3$

C)  $y = x^2 - 3$

D)  $y = (x + 3)^2$