Evaluate the function.

1) For \( f(x) = x^2 + 2x - 7 \), find \( f(1) \).

2) For \( f(x) = 2x^2 + 2x - 6 \), find \( f(k - 1) \).

3) For \( f(x) = \sqrt{3 - x} \), find \( f(m + 2) \).

Determine whether the graph is the graph of a function.

4)
For the given function, find and simplify \(\frac{f(x + h) - f(x)}{h}\).

6) \(f(x) = 7x + 3\)

7) \(f(x) = \frac{1}{4x}\)

8) \(f(x) = x^2 + 7x - 6\)

Find the natural domain of the function.

9) \(f(x) = \frac{6}{2x - 4}\)

10) \(f(x) = \frac{x - 8}{\sqrt{x} + 8}\)
11) \( f(x) = \sqrt{9 - x^2} \)

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

12) \( f(x) = -1 \)

13) \( f(x) = 6x^4 + 2x + 8 \)

14) \( f(x) = -8x^5 + 2x^3 \)

15) \( f(x) = \frac{-3}{x^2 - 1} \)

16) \( f(x) = \frac{-6}{x - 4} \)

17) \( g(x) = \frac{-8x}{x^2 + 9} \)
Solve the problem.

18) A box with an open top is to be constructed from a rectangular piece of cardboard with dimensions 10 inches by 20 inches by cutting out equal squares of side $x$ at each corner and then folding up the sides as in the figure. Express the volume $V$ of the box as a function of $x$.

19) A power plant is located on a river that is 600 feet wide. To lay a new cable from the plant to a location in a city 1 mile downstream on the opposite side costs $175 per foot across the river and $100 per foot along the land. Suppose that the cable goes from the plant to a point $Q$ on the opposite side that is $x$ feet from the point $P$ directly opposite the plant. Write a function $C(x)$ that gives the cost of laying the cable in terms of the distance $x$.

For the given functions $f$ and $g$, find the requested function or functional value.

20) $f(x) = 7x - 9; \quad g(x) = 9x - 4$
Find $f - g$.

21) $g(x) = -2x - 1; \quad f(x) = -5x^2 + 3x + 5$
Find $\left(\frac{f}{g}\right)(-3)$. 
For the given functions, find the requested function or functional value.

22) For \( f(x) = 8x + 6 \) and \( g(x) = 3x - 1 \), find \((f \circ g)(x)\).

23) For \( f(x) = \frac{6}{x + 8} \) and \( g(x) = \frac{5}{7x} \), find \((f \circ g)(x)\).

24) For \( f(x) = \frac{x - 6}{10} \) and \( g(x) = 10x + 6 \), find \((g \circ f)(x)\).

Sketch the requested graphs.

25) Begin by graphing the standard square root function \( f(x) = \sqrt{x} \) as a solid curve. Then use transformations of this graph to graph the function \( g(x) = \sqrt{x} - 1 \) as a dashed curve.
26) Begin by graphing the standard square root function \( f(x) = \sqrt{x} \) as a solid curve. Then use transformations of this graph to graph the function \( g(x) = \sqrt{x + 2} \) as a dashed curve.

27) Begin by graphing the standard absolute value function \( f(x) = |x| \) as a solid curve. Then use transformations of this graph to graph the function \( g(x) = |x - 6| - 6 \) as a dashed curve.

28) Begin by graphing the standard quadratic function \( f(x) = x^2 \) as a solid curve. Then use transformations of this graph to graph the function \( h(x) = (x - 2)^2 + 6 \) as a dashed curve.
Find the inverse of the function.

29) \( f(x) = 2x + 3 \)

30) \( f(x) = x^3 - 5 \)

Graph the exponential function.

31) \( y = 2^x \)

32) \( y = \left(\frac{1}{4}\right)^x \)
Graph the function.

33) $y = \log_5 x$

34) $f(x) = \log_3 (x + 2)$

Solve for $x$.

35) $\log_7 \left( \frac{1}{x} \right) = 4$

36) $\log_2 5 + \log_2 x = 1$
Solve the problem.

37) Find the hydrogen ion concentration of a solution whose pH is 6.9. Use the formula
\[ \text{pH} = -\log [\text{H}^+] \].

38) If an earthquake measures 5.4 on the Richter scale, what is its intensity, I, in terms of I₀?
Use \( R = \log_{10}(I/I_0) \).

Express the angle in radian measure in terms of \( \pi \).

39) 330°

Convert the radian measure to degrees. Round to the nearest hundredth if necessary.

40) \( \frac{11\pi}{10} \)

Find the exact value of the trigonometric function. Do not use a calculator or tables.

41) \( \sin \left( \frac{4\pi}{3} \right) \)

42) \( \cos \left( \frac{11\pi}{6} \right) \)

Which answer choice is equivalent to the given expression?

43) \( \frac{1 + \sin x}{\cos x} \)

A) \( \frac{\cos x}{1 + \sin x} \)  
B) \( \frac{\cos x}{1 - \sin x} \)  
C) \( \frac{\sin x}{1 - \cos x} \)
Find the period, amplitude, or shift.

44) Find the period of \( y = -5 \cos\left(5x + \frac{\pi}{2}\right) \).

45) Find the shift for \( y = -4 + 2 \sin\left(6x + \frac{\pi}{3}\right) \).

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

46) \( f(t) = t \cos t \)

Find the exact value of the real number \( y \).

47) \( y = \arcsin\left(\frac{\sqrt{3}}{2}\right) \)

48) \( y = \arccos\left(\frac{\sqrt{3}}{2}\right) \)

Find the formula for \( f^{-1}(x) \) for the function \( f \). First indicate how the domain should be restricted so \( f \) has an inverse.

49) \( f(x) = 6 \cos 5x \)

50) \( f(x) = 9 \tan 4x \)
1) -4
2) \( f(k - 1) = 2k^2 - 2k - 6 \)
3) \( \sqrt{1 - m} \)
4) Function
5) Function
6) 7
7) \( -\frac{1}{4x(x + h)} \)
8) \( 2x + h + 7 \)
9) \( \{x: x \neq 2\} \)
10) \( \{x: x > -8\} \)
11) \( \{x: |x| \leq 3\} \)
12) Even
13) Neither
14) Odd
15) Even
16) Neither
17) Odd
18) \( V(x) = x(10 - 2x)(20 - 2x) \)
19) \( C(x) = 175\sqrt{x^2 + 600^2} + 100(5280 - x) \)
20) \(-2x - 5\)
21) \( -\frac{49}{5} \)
22) \( 24x - 2 \)
23) \( \frac{42x}{5 + 56x} \)
24) \( x \)
25)
26)
27)
28)
29) \( f^{-1}(x) = \frac{x - 3}{2} \)
30) \( f^{-1}(x) = \frac{3}{\sqrt{x + 5}} \)
31) 

32) 

33) 

34) 

35) \( \frac{1}{2401} \)

36) \( \frac{2}{5} \)

37) \( 1.26 \times 10^{-7} \)

38) \( 251,189 \cdot l_0 \)

39) \( \frac{11\pi}{6} \)

40) \( 198^\circ \)

41) \( -\frac{\sqrt{6}}{2} \)

42) \( \frac{\sqrt{2}}{2} \)

43) B

44) \( \frac{2\pi}{5} \)

45) \( \frac{\pi}{18} \) to the left

46) odd

47) \( \frac{\pi}{3} \)

48) \( \frac{\pi}{6} \)

49) \( 0 \leq x \leq \frac{\pi}{5} \), \( f^{-1}(x) = \frac{1}{5} \cos^{-1} \left( \frac{x}{5} \right) \)

50) \( -\frac{\pi}{8} \leq x \leq \frac{\pi}{8} \), \( f^{-1}(x) = \frac{1}{4} \tan^{-1} \left( \frac{x}{9} \right) \)