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

Determine the slope and the \( y \)-intercept of the graph of the equation.

1) \( x + y + 3 = 0 \)
   A) \( m = 1; (0, -3) \)  
   B) \( m = -1; (0, 3) \)  
   C) \( m = -1; (0, -3) \)  
   D) \( m = 0; (0, -3) \)  

2) \( 8x - 5y - 40 = 0 \)
   A) \( m = \frac{5}{8}; (0, 5) \)  
   B) \( m = -\frac{8}{5}; (0, 8) \)  
   C) \( m = \frac{8}{5}; (0, -8) \)  
   D) \( m = 8; (0, 40) \)  

Determine whether the relation is a function.

3) \{(-4, 4), (-1, -8), (4, -6), (7, -5)\}  
   A) Function  
   B) Not a function  

Use the vertical line test to determine whether or not the graph is a graph in which \( y \) is a function of \( x \).

4) 
   A) not a function  
   B) function  

5) 
   A) not a function  
   B) function
6) Find the inverse of the one-to-one function.

7) \( f(x) = \frac{3}{4x - 1} \)
   
   A) \( f^{-1}(x) = \frac{3}{4y} + \frac{1}{4} \)
   
   B) \( f^{-1}(x) = \frac{4x - 1}{3} \)
   
   C) \( f^{-1}(x) = \frac{3}{4x} + \frac{1}{4} \)
   
   D) \( f^{-1}(x) = -\frac{1}{4} - \frac{3}{4x} \)

8) \( f(x) = 5x + 6 \)
   
   A) \( f^{-1}(x) = \frac{5x - 6}{5} \)
   
   B) \( f^{-1}(x) = \frac{x + 6}{5} \)
   
   C) \( f^{-1}(x) = \frac{x - 6}{5} \)
   
   D) \( f^{-1}(x) = \frac{y - 6}{5} \)

9) \( f(x) = \sqrt{x - 5} \)
   
   A) \( f^{-1}(x) = x^2 + 5 \)
   
   B) \( f^{-1}(x) = x^2 - 5 \)
   
   C) \( f^{-1}(x) = \frac{1}{x^2 + 5} \)
   
   D) \( f^{-1}(x) = x + 5 \)

Use the given conditions to write an equation for the line in slope-intercept form.

10) Passing through (1, -6) and (-8, 5)

   A) \( y = mx - \frac{43}{9} \)
   
   B) \( y = -\frac{11}{9}x - \frac{43}{9} \)
   
   C) \( y + 6 = -\frac{11}{9}(x - 1) \)
   
   D) \( y = \frac{11}{9}x - \frac{43}{9} \)

Use the given conditions to write an equation for the line in the indicated form.

11) Passing through (4, 5) and perpendicular to the line whose equation is \( y = \frac{1}{9}x + 9 \); slope-intercept form

   A) \( y = -9x - 41 \)
   
   B) \( y = -\frac{1}{9}x - \frac{41}{9} \)
   
   C) \( y = -9x + 41 \)
   
   D) \( y = 9x - 41 \)
12) Passing through \((2, -4)\) and parallel to the line whose equation is \(y = -8x + 9\);

**slope-intercept form**

A) \(y = -\frac{1}{8}x - \frac{3}{2}\)  
B) \(y = -8x - 12\)  
C) \(y = 8x - 12\)  
D) \(y = -8x + 12\)

Use the given conditions to write an equation for the line in slope-intercept form.

13) Slope \(= \frac{4}{9}\), \(y\)-intercept = 4

A) \(f(x) = \frac{4}{9}x + 4\)  
B) \(f(x) = \frac{4}{9}x - 4\)  
C) \(f(x) = -\frac{4}{9}x - 4\)  
D) \(f(x) = \frac{9}{4}x + 9\)

Find the slope of the line that goes through the given points.

14) \((-8, 8), (-8, -6)\)

A) \(-\frac{1}{8}\)  
B) Undefined  
C) \(-\frac{7}{8}\)  
D) 0

15) \((6, -8), (-5, -5)\)

A) \(\frac{3}{11}\)  
B) \(-\frac{11}{3}\)  
C) \(-\frac{3}{11}\)  
D) -13

16) \((-2, 9), (7, 9)\)

A) 5  
B) 14  
C) 0  
D) 1

17) \((2, 4), (-8, -1)\)

A) \(\frac{2}{7}\)  
B) 2  
C) \(\frac{7}{2}\)  
D) \(\frac{1}{2}\)
The line graph shows the recorded hourly temperatures in degrees Fahrenheit at an airport.

18) During which hour did the temperature increase the most?  
   A) 12 p.m. to 1 p.m.  
   B) 1 p.m. to 2 p.m.  
   C) 9 a.m. to 10 a.m.  
   D) 10 a.m. to 11 a.m.  

19) At what time was the temperature its lowest?  
   A) 4 p.m.  
   B) 6 p.m.  
   C) 1 p.m.  
   D) 9 a.m.  

20) At what time was the temperature the highest?  
   A) 11 a.m.  
   B) 2 p.m.  
   C) 5 p.m.  
   D) 1 p.m.  

21) At what time was the temperature 79°F?  
   A) 4 p.m.  
   B) 1 p.m.  
   C) 3 p.m.  
   D) 12 p.m.  

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

Begin by graphing the standard square root function $f(x) = \sqrt{x}$. Then use transformations of this graph to graph the given function.

22) $h(x) = \sqrt{-x} + 2 + 1$  

22) ____________
Begin by graphing the standard quadratic function \( f(x) = x^2 \). Then use transformations of this graph to graph the given function.

23) \( g(x) = -\frac{1}{3}(x + 6)^2 - 1 \)

24) \( h(x) = (x - 6)^2 - 4 \)

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

Solve the problem.

25) Suppose a life insurance policy costs $12 for the first unit of coverage and then $3 for each additional unit of coverage. Let \( C(x) \) be the cost for insurance of \( x \) units of coverage. What will 10 units of coverage cost?

A) $39  
B) $18  
C) $42  
D) $30

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

26) \( x + y^2 = 81 \)

A) \( y \) is a function of \( x \)  
B) \( y \) is not a function of \( x \)

27) \( 2x + 6y = 7 \)

A) \( y \) is a function of \( x \)  
B) \( y \) is not a function of \( x \)

For the given functions \( f \) and \( g \), find the indicated composition.

28) \( f(x) = -6x + 8, \quad g(x) = 3x + 9 \)

\( (g \circ f)(x) \)

A) \(-18x + 62\)  
B) \(18x + 33\)  
C) \(-18x + 33\)  
D) \(-18x - 15\)
29) \( f(x) = x^2 - 2x - 4, \quad g(x) = x^2 + 2x - 3 \)
\((f \circ g)(-3)\)
A) 18 \quad B) 117 \quad C) 139 \quad D) -4

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

Evaluate the piecewise function at the given value of the independent variable.
30) \( f(x) = \begin{cases} x - 3 & \text{if } x > 0, \\ -(x - 3) & \text{if } x \leq 0 \end{cases} \); \( f(-4) \)
31) \( g(x) = \begin{cases} x^2 + 1 & \text{if } x \neq -6, \\ x + 2 & \text{if } x = -6 \end{cases} \); \( g(-4) \)

Graph the equation.
32) \( 4x + 5y - 18 = 0 \)
33) \( y = -\frac{1}{2}x + 4 \)

Evaluate the function at the given value of the independent variable and simplify.
34) \( f(x) = x^2 + 5; \quad f(x + 2) \)
35) \( f(x) = -4x - 1; \quad f(2) \)

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

Match the story with the correct figure.

36) The amount of rainfall as a function of time, if the rain fell more and more softly.
   A) y
   B) y
   C) y
   D) y

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

Plot the given points in a rectangular coordinate system.

37) A(0, 2); B(-2,4), C(-1,-3), D(5,0)
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Identify the intervals where the function is changing as requested.

38) Increasing

A) (-2, -1) or (3, ∞)  B) (-2, 1)  C) (-1, 3)  D) (-1, ∞)