

The following table contains input-output values for a function. Is this function linear?

1)

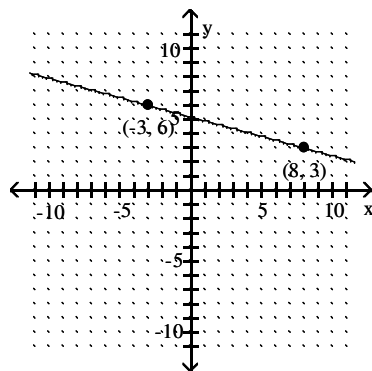
x	y
-6	-7
-3	-1
0	5
3	11
6	17
9	23
12	29

2)

x	y
-4	-4
-2	-16
2	-20
2	-16
4	101
13	149
15	205

Find the slope of the line.

3)



Find the slope of the line containing the given points.

4) (8, 6) and (-9, 7)

5) (-2, 6) and (-6, 6)

**Solve the problem.**

- 6) A cross-country skier reaches the 12-km mark of a race 40 min after reaching the 2-km mark. Find the speed of the skier.

- 7) In a certain city, the cost of a taxi ride is computed as follows: There is a fixed charge of \$2.80 as soon as you get in the taxi, to which a charge of \$2.25 per mile is added. Find an equation that can be used to determine the cost,  $C(x)$ , of an  $x$ -mile taxi ride.

**Find the slope and the y-intercept of the equation.**

8)  $6x + 5y = 27$

9)  $-4x + 8y = 32$

**Write a slope-intercept equation for a line with the given characteristics.**

10)  $m = -\frac{7}{9}$ ; y-intercept  $\left(0, \frac{59}{9}\right)$

11)  $m = -9$ , y-intercept  $\left(0, \frac{9}{4}\right)$

12)  $m = \frac{9}{8}$ , passes through  $(3, -7)$

13)  $m = 4$ , passes through  $(1, -2)$

**Determine the equation of the line described. Put answer in the slope-intercept form, if possible.**

14) Through  $(-8, -3)$ , perpendicular to  $5x + 9y = -67$

15) Through  $(6, -1)$ , parallel to  $8x - 9y = 111$

**Determine whether the pair of lines is parallel, perpendicular, or neither.**

16)  $3x - 6y = -4$   
 $18x + 9y = -4$

17)  $9x + 3y = 12$   
 $12x + 4y = 20$

**Write the function in the form  $y = a(x - h)^2 + k$ .**

18)  $f(x) = x^2 + 8x - 8$

19)  $f(x) = -x^2 + x - 1$

**Find the vertex of the graph of the quadratic function.**

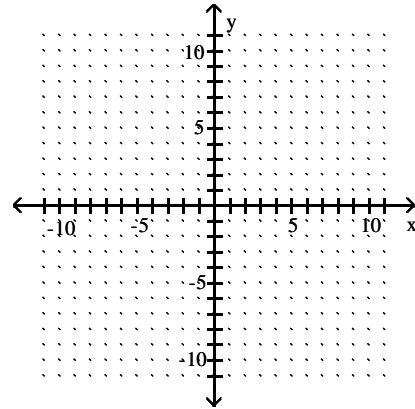
20)  $f(x) = -2x^2 + 4x - 8$

**Solve.**

21) The length and width of a rectangle must have a sum of 76 feet. Find the dimensions of the rectangle whose area is as large as possible.

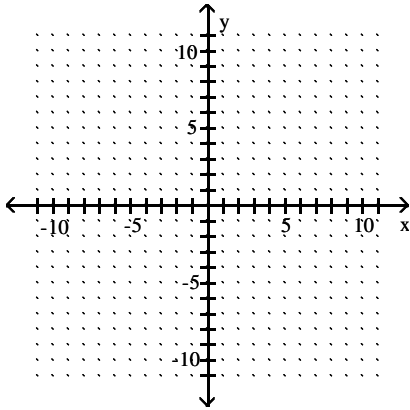
- 22) The profit that the vendor makes per day by selling  $x$  pretzels is given by the function  $P(x) = -0.004x^2 + 2.4x - 150$ . Find the number of pretzels that must be sold to maximize profit.

24)  $f(x) = 3x^2 - 5x - 1$



Sketch the graph of the quadratic function by using a calculator to find the vertex, intercepts, and determining if the graph opens upward or downward.

23)  $f(x) = -x^2 - 6x - 4$



# Answer Key

Testname: 2.3-2.4

1) Yes

2) No

3)  $-\frac{3}{11}$

4)  $-\frac{1}{17}$

5) 0

6) 15 km/hour

7)  $C(x) = 2.80 + 2.25x$

8)  $-\frac{6}{5}; \left(0, \frac{27}{5}\right)$

9)  $\frac{1}{2}; (0, 4)$

10)  $y = -\frac{7}{9}x + \frac{59}{9}$

11)  $y = -9x + \frac{9}{4}$

12)  $y = \frac{9}{8}x - \frac{83}{8}$

13)  $y = 4x - 6$

14)  $y = \frac{9}{5}x + \frac{57}{5}$

15)  $y = \frac{8}{9}x - \frac{19}{3}$

16) Perpendicular

17) Parallel

18)  $y = (x + 4)^2 - 24$

19)  $y = -\left(x - \frac{1}{2}\right)^2 - \frac{3}{4}$

20) (1, -6)

21) length 38 ft; width 38 ft

22) 300 pretzels

23)

24)

