MAT 1033C –– Martin–Gay

Name_____

Intermediate Algebra

Date _____

Chapter 3   (3.1 – 3.5, 3.7)

Day/Time: _____

Practice for the Exam

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

Fill in the blank with one of the words or phrases listed below.

relation	standard	slope–intercept	range	point–slope
line	slope	x	parallel	perpendicular
function	domain	y	linear function	linear inequality

1) A _____ is a set of ordered pairs.   1) _____

2) The graph of every linear equation in two variables is a _____ .   2) _____

3) The statement –x + 2y > 0 is called a _____ in two variables.   3) _____

4) _____ form of a linear equation in two variables is Ax + By = C.   4) _____

5) The _____ of a relation is the set of all second components of the ordered pairs of the   5) _____
   relation.

6) _____ lines have the same slope and different y–intercepts.   6) _____

7) _____ form of a linear equation in two variables is y = mx + b.   7) _____

8) A _____ is a relation in which each first component in the ordered pairs corresponds   8) _____
   to exactly one second component.

9) In the equation y = 4x –2, the coefficient of x is the _____ of the corresponding   9) _____
   graph.

10) Two lines are _____ if the product of the slopes is –1.   10) _____

11) To find the x–intercept of a linear equation, let _____ = 0 and solve for the other   11) _____
    variable.

12) The _____ of a relation is the set of all first components of the ordered pairs of the   12) _____
    relation.

13) A _____ is a function that can be written in the form $f(x) = mx + b$.
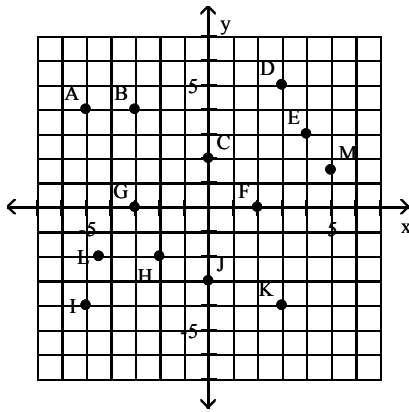
13) _____

14) To find the y–intercept of a linear equation, let _____ = 0 and solve for the other variable.

14) _____

15) The equation $y - 8 = -5(x + 1)$ is written in _____ form.

15) _____

Determine the coordinates of the indicated point on the graph.

16) C

16) _____

17) I

17) _____

Determine whether the ordered pair is a solution of the given equation.

18) $y = -4x - 6$; $(-2, 14)$

18) _____

19) $y = 6x^2$; $(4, 96)$

19) _____

20) $y = 2|x|$; $(-8, 16)$

20) _____

21) $y = x^3$; $(-4, -64)$

21) _____

22) $y = \sqrt{x} - 5$; $(1, 4)$

22) _____

Determine whether the equation is linear or not.

23) $x + y = 5$

23) _____

24) $y = -4x - 5$

24) _____

25) $y = |x| - 5$

25) _____

26) $y = x^2 + 2$

26) _____

2

27) $y = x^3 - 9$ 27) _____

Find the domain and the range of the relation. Then determine whether the relation is a function

28) {(–2, –7), (2, 5), (5, –3), (7, –1)}   28) _____

29) {(–3, 7), (–2, 2), (0, –2), (2, 2), (4, 14)}   29) _____
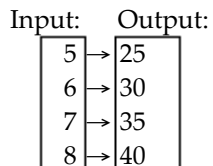
30)   30) _____

Input: Output:
patient   allergy

Alice	→	fur
Brad	→	dust
Carl	→	milk

31)   31) _____

Input: Output:
student   advisor

Bob	→	Ms. Lee
Ann	→	Mr. Bar
Dave		

32)   32) _____

Input: Output:

5	→	25
6	→	30
7	→	35
8	→	40
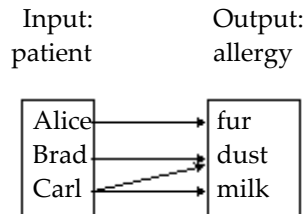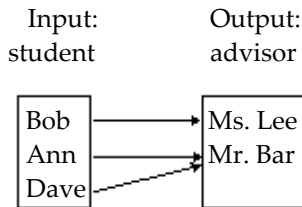
Decide whether the relation defines a function.

33) $5x = 11 - 2y$ 33) _____

34) $y = x^3$ 34) _____

35) $x = 7y^2$ 35) _____

36) $y = \dfrac{14}{13 - x}$ 36) _____

37) $x = |y + 6|$ 37) _____

3

Use the vertical line test to determine whether the graph is the graph of a function.

38)
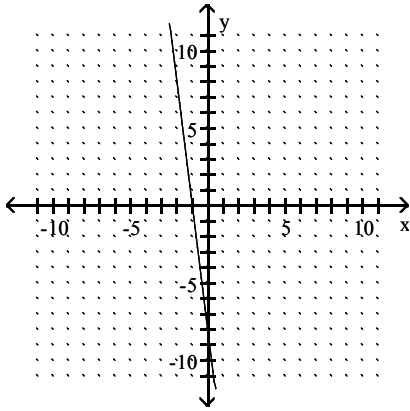
38) _____

39)
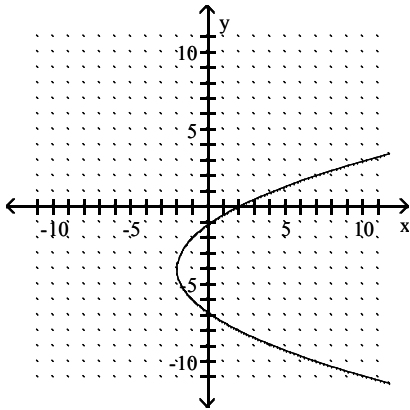
39) _____

40)

40) _____
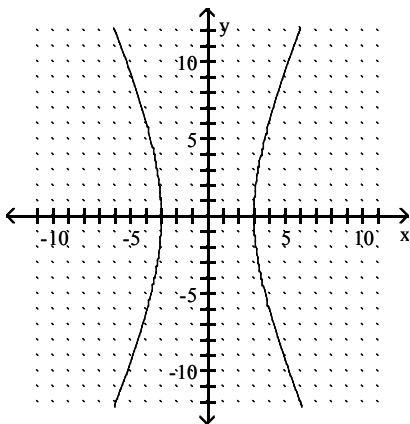
Decide whether the relation defines a function.
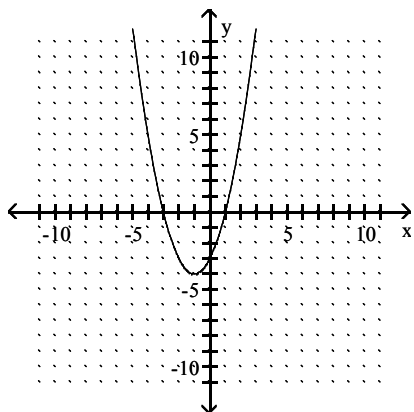
41) $x = y^2$

41) _____

4

Find the domain and the range of the relation. Use the vertical line test to determine whether the graph is the graph of a function.
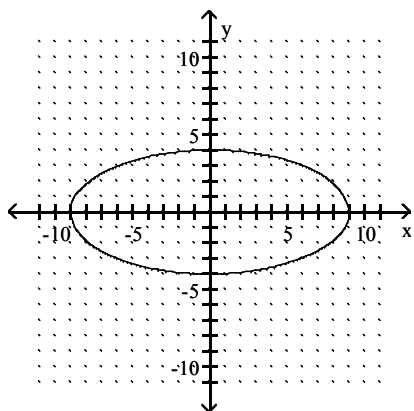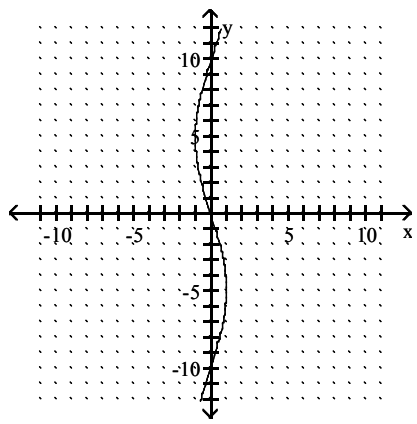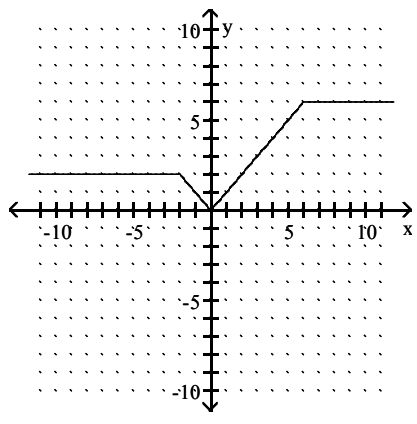
42)

42) _____

43)

43) _____

44)

44) _____

5

45)
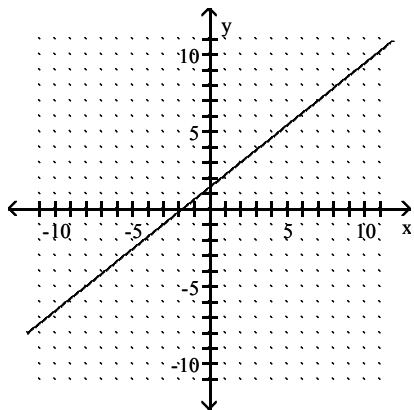
46)

Find the indicated value.

47) Find f(3) when f(x) = 5x^2 + 2x – 7

47) _____

48) Find f(7) when f(x) = 8x^3

48) _____

49) Find f(12) when f(x) = 6

49) _____

50) Find f(–6) when f(x) = –4.8(x + 5.3)

50) _____

51) Use the graph to find f(1).

51) _____
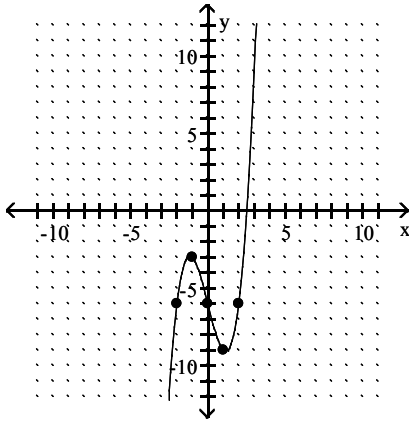
Solve.

52) The altitude above sea level of an airplane just after taking off from an airport on a high plateau is given by the linear function h(t) = 1100t + 2217, where h(t) is in feet and t is the time in minutes since take–off. Find the altitude of the airplane after 6 minutes.

52) _____

53) The cost of having a car towed is given by the linear function C(x) = 3x + 80, where C(x) is in dollars and x is the number of miles the car is towed. Find the cost of having a car towed 2 miles.

53) _____

Graph the function.

54) f(x) = 5x

54) _____
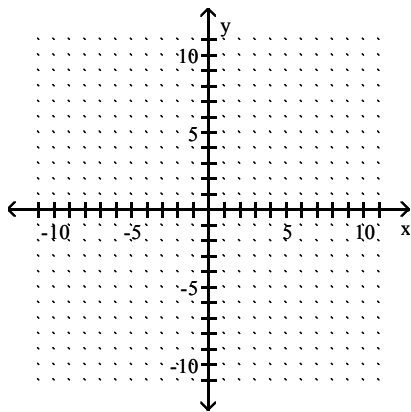
55) $f(x) = 5$
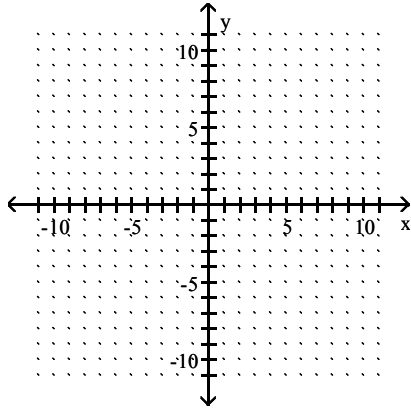
55) _____

Graph the equation.

56) $x - 4y = -4$
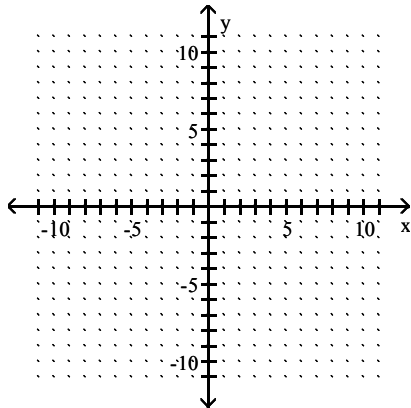
56) _____

57) $9x + y = -6$
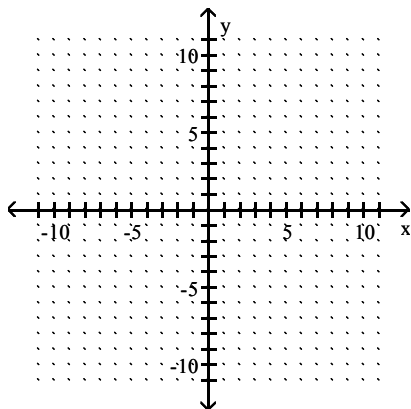
57) _____

Solve.

58) The monthly cost of a certain long distance service is given by the linear function $C(t) = 0.04t + 9.95$ where $C(t)$ is in dollars and t is the amount of time in minutes called in a month. Find the cost of calling long distance for 80 minutes in a month.

58) _____

8

Write the equation using function notation.

59) $-x - 3y = -6$

59) _____

60) $x - y = -3$

60) _____

Graph the function by finding x– and y–intercepts.

61) $x = 3y$

61) _____
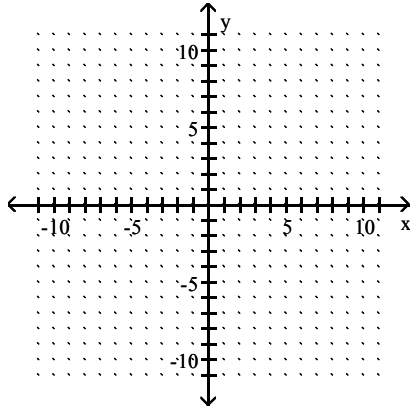
62) $2x - 6y = 12$

62) _____

63) $2x + 8y = 8$

63) _____

9
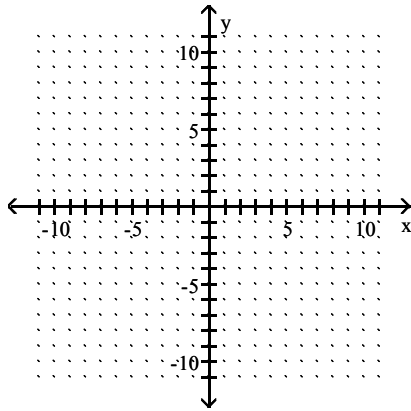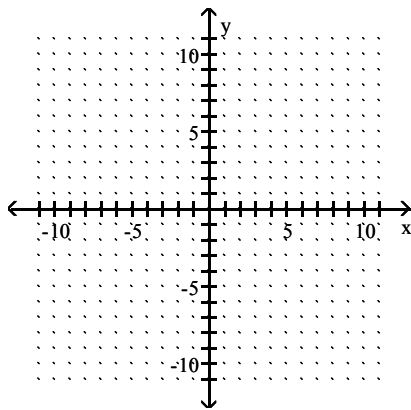
Graph the equation.

64) $y = 5$
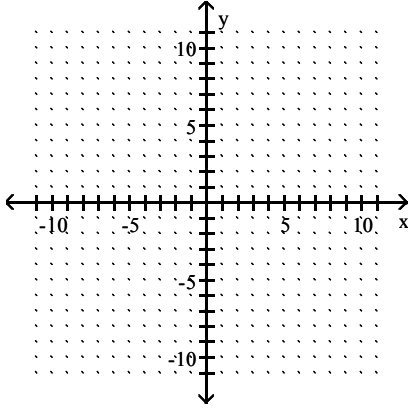
64) _____

65) $x = -4$
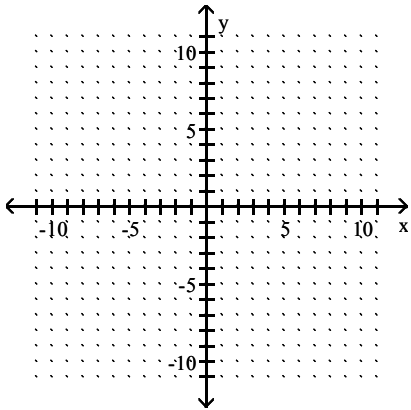
65) _____

66) $y + 2 = 0$
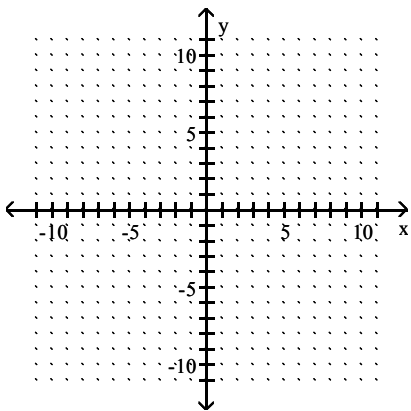
66) _____

67) x + 4 = 0

67) _____
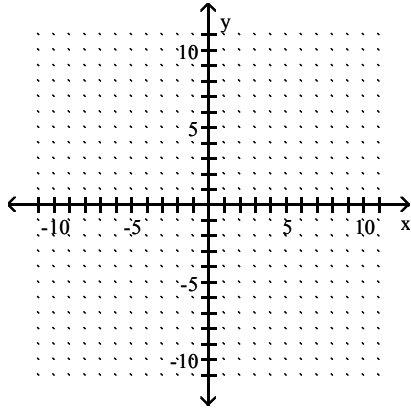
Find the slope of the line that goes through the given points.

68) $(4, -7), (1, -7)$

68) _____

69) $(9, 1), (3, 9)$

69) _____

70) $(3, 8), (3, -1)$

70) _____

Use the points shown on the graph to determine the slope of the line.

71)

71) _____

72)

72) _____

11
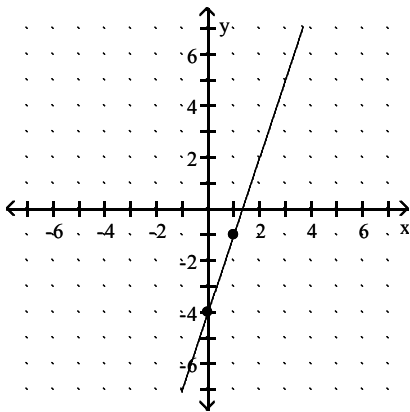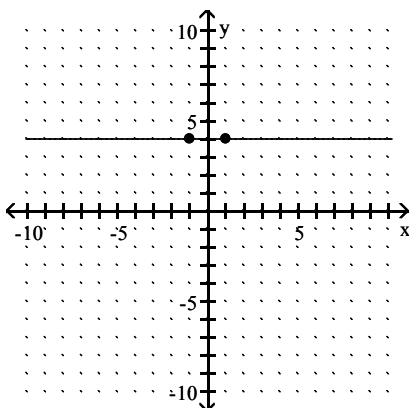
73)
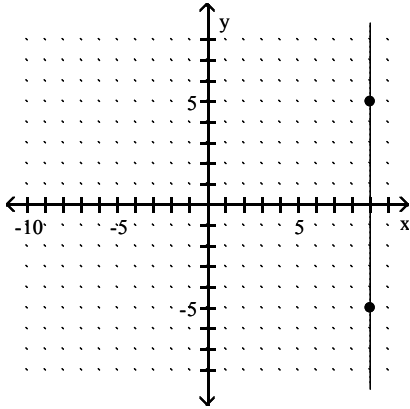
73) _____

Determine which line has the greater slope.

74)
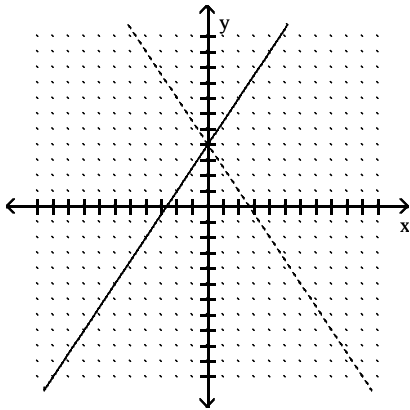
74) _____

Find the slope of the line.

75) $3y = -2x - 16$

75) _____

76) $y = 4x$

76) _____

77) $-3y + 4x = -27$

77) _____

78) $f(x) = -\dfrac{2}{5}x - 5$

78) _____

Find the slope and the y-intercept of the line.

79) $2y - 4x = 32$

79) _____

Solve the problem.

80) When a tow truck is called, the cost of the service is given by the linear function $y = 3x + 80$, where y is in dollars and x is the number of miles the car is towed. Find and interpret the slope and y-intercept of the linear equation.

80) _____

81) The altitude above sea level of an airplane just after taking off from an airport on a high plateau is given by the linear function $y = 700x + 3386$, where y is in feet and x is the time in minutes since take–off. Find and interpret the slope and y–intercept.

81) _____

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

82) $(-4, 2)$, $(-3, 2)$

82) _____

Find the slope of the line.

83) $y + 2 = 8$

83) _____

84) $x + 4 = 0$

84) _____

Determine whether the lines are parallel, perpendicular, or neither.

85) $f(x) = 10x - 8$

$g(x) = \frac{1}{10}x + 5$

85) _____

86) $2x + 8y = 2$
$8x - 2y = 16$

86) _____

87) $-40x - 8y = 8$
$-5x - y = 17$

87) _____

88) $x + 4y = -14$
$5x + 5y = 5$

88) _____

Solve the problem.

89) Find the slope of a line perpendicular to the line $-5x - 6y = 3$.

89) _____

90) Find the slope of a line parallel to the line $f(x) = -\frac{1}{3}x - 2$.

90) _____

91) Find the slope of a line parallel to the line $3x - 6y = 6$.

91) _____

92) Find the slope of a line perpendicular to the line $f(x) = -\frac{7}{8}x + 8$.

92) _____

Use the slope–intercept form of the linear equation to write the equation of the line with the given slope and y–intercept.

93) Slope 5; y–intercept $(0, 1)$

93) _____

Graph the equation.

94) x + y = 3

94) _____
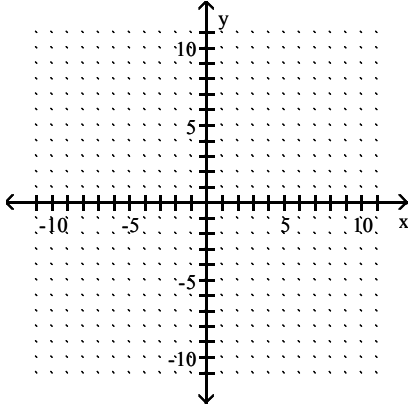
95) 3x + 7y = 14

95) _____
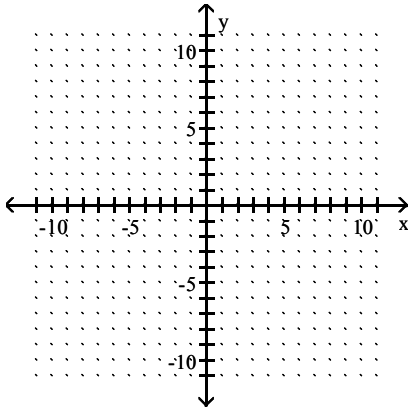
96) 2x + y = 3

96) _____
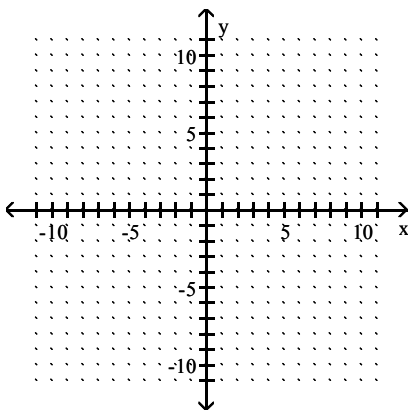
97) $y = \dfrac{2}{5}x + 2$

97) _____
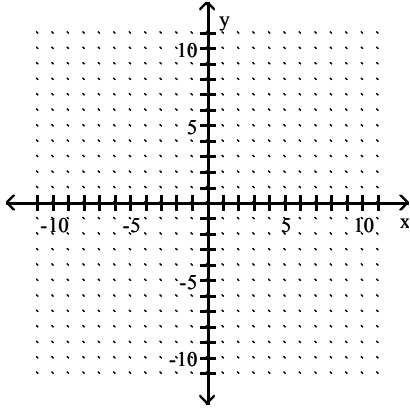
Write an equation of the line with the given slope and containing the given point. Write the equation in the form $y = mx + b$.

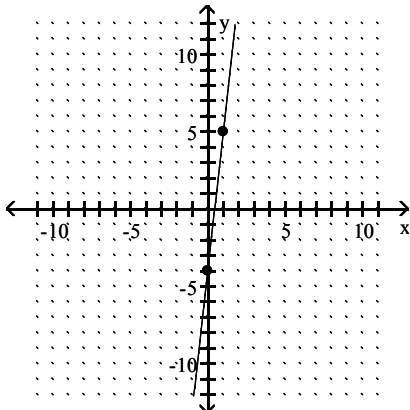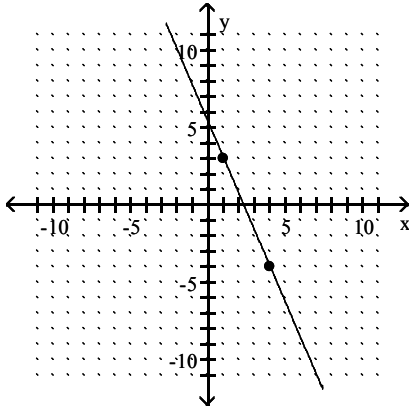98) Slope 3; through $(-3, 8)$

98) _____

99) Slope $\dfrac{5}{4}$; through $(0, 4)$

99) _____

Find an equation of the line. Write the equation using function notation.

100) Through $(7, 61)$ and $(2, 21)$

100) _____

101) Through $\left(1, \dfrac{11}{24}\right)$ and $\left(3, \dfrac{9}{8}\right)$

101) _____

Write an equation of the line with the given slope and containing the given point. Write the equation in the form $y = mx + b$.

102) Slope $-\dfrac{2}{9}$; through $(4, 3)$

102) _____

Write an equation in standard form for the line graphed.

103)

103) _____

15

104)

104) _____

Find an equation of the line. Write the equation in standard form.

105) Slope 4; through (–2, –2)

105) _____

106) Through (9, –28) and (1, 4)

106) _____

107) Slope 0; through (–8, 2)

107) _____

108) Horizontal; through (–8, 5)

108) _____

109) Vertical; through (9, 7)

109) _____

110) Undefined slope; through (–9, 5)

110) _____

111) Horizontal; through (0, –5)

111) _____

Find an equation of the line. Write the equation using function notation.

112) Through (5, 1); parallel to $f(x) = 5x - 3$

112) _____

113) Through (3, –4); perpendicular to $x + 5y = -5$

113) _____

Find an equation of the line. Write the equation in standard form.

114) Through (3, 3); parallel to $9x + 2y = 2$

114) _____

115) Through (11, 9); parallel to $y = 5$

115) _____

116) Through (9, –3); perpendicular to $y = 8$

116) _____

117) Through (3, 5); perpendicular to $2x - 3y = 2$

117) _____

Graph the inequality.

118) x > 9

118) _____
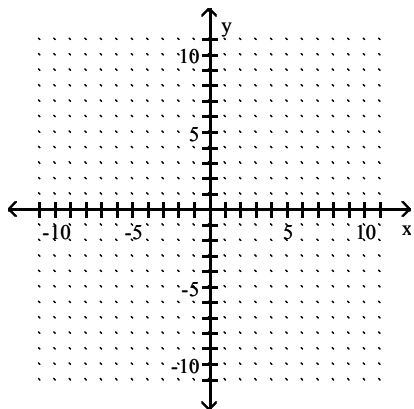
119) x < −4

119) _____
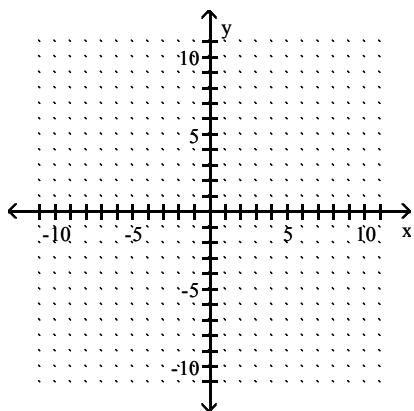
120) x + y ≤ −2

120) _____
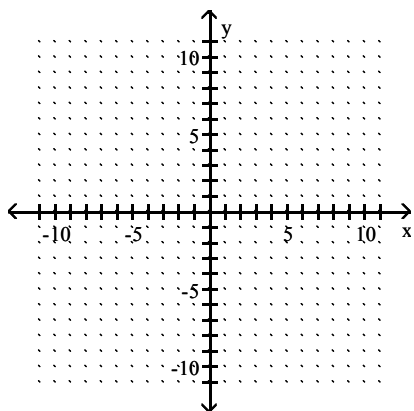
121) $5x + 6y > 30$
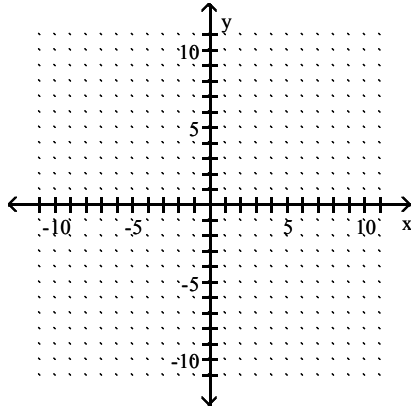
121) _____

122) $y < 3x$

122) _____

123) $3x - 2y \leq 2$

123) _____
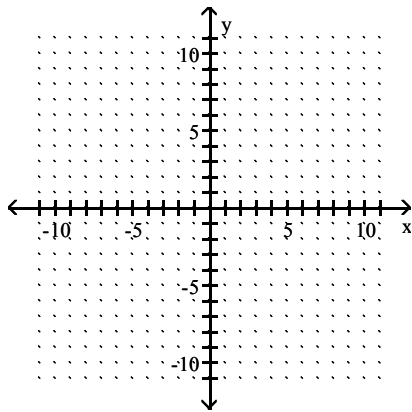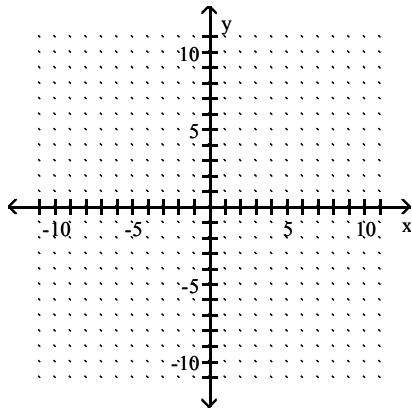
1) relation
2) line
3) linear inequality
4) Standard
5) range
6) Parallel
7) Slope–Intercept
8) function
9) slope
10) perpendicular
11) y
12) domain
13) linear function
14) x
15) point–slope
16) (0, 2)
17) (–5, –4)
18) No
19) Yes
20) Yes
21) Yes
22) No
23) linear
24) linear
25) not linear
26) not linear
27) not linear
28) domain: {–2, 2, 5, 7}
    range: {–7, 5, –3, –1}
    function
29) domain: {–3, –2, 0, 2, 4}
    range: {7, 2, –2, 14}
    function
30) domain: {Alice, Brad, Carl}
    range: {fur, dust, milk}
    not a function
31) domain: {Bob, Ann, Dave}
    range: {Ms. Lee, Mr. Bar}
    function
32) domain: {5, 6, 7, 8}
    range: {25, 30, 35, 40}
    function
33) function
34) function
35) not a function
36) function
37) not a function
38) function
39) not a function
40) not a function

41) not a function
42) domain: $(-\infty, \infty)$
   range: $(-\infty, \infty)$
   function
43) domain: $(-\infty, \infty)$
   range: $[-4, \infty)$
   function
44) domain: $[-9, 9]$
   range: $[-4, 4]$
   not a function
45) domain: $[-1, 1]$
   range: $(-\infty, \infty)$
   not a function
46) domain: $(-\infty, \infty)$
   range: $[0, 6]$
   function
47) 44
48) 2744
49) 6
50) 3.36
51) –9
52) 8817 feet
53) $86
54)

55)
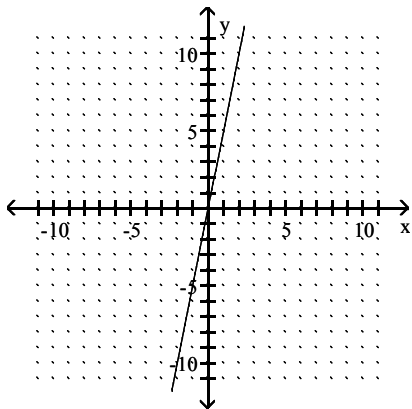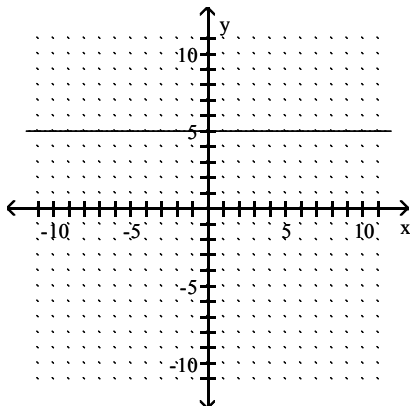
56)
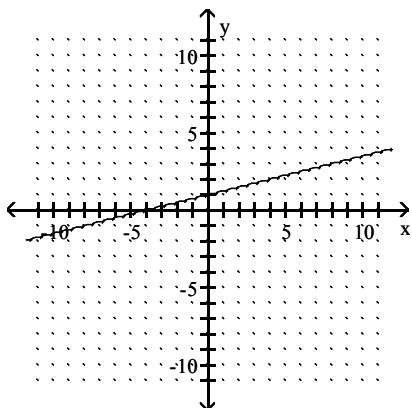
57)
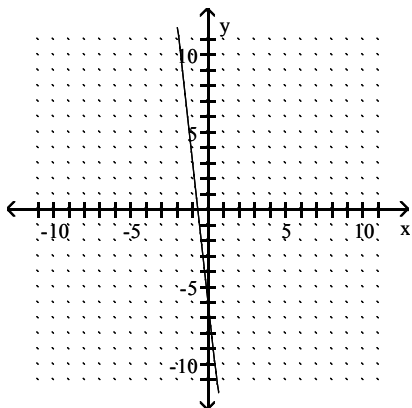
58) $13.15

59) $f(x) = -\dfrac{1}{3}x + 2$

60) $f(x) = x + 3$

61)
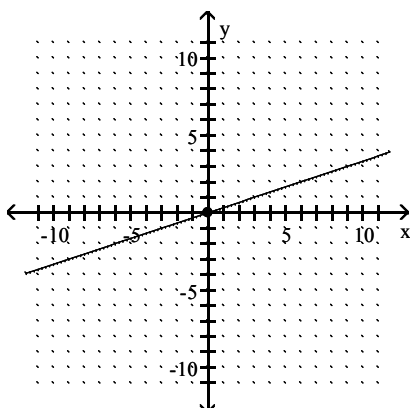
62)

63)

64)
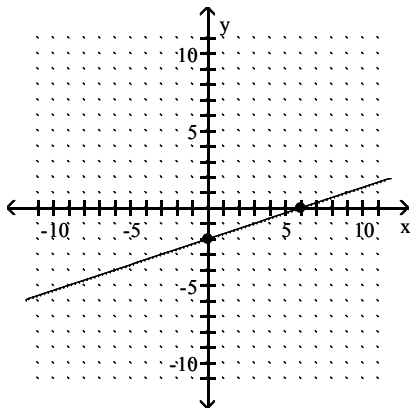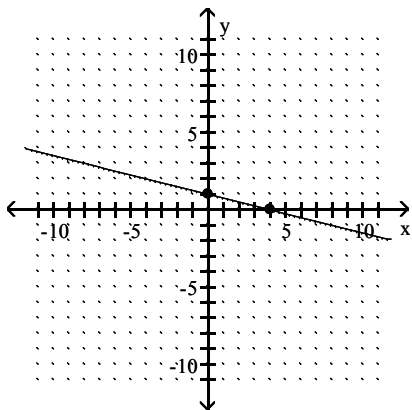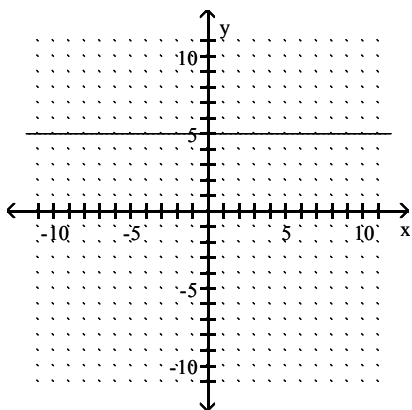
65)
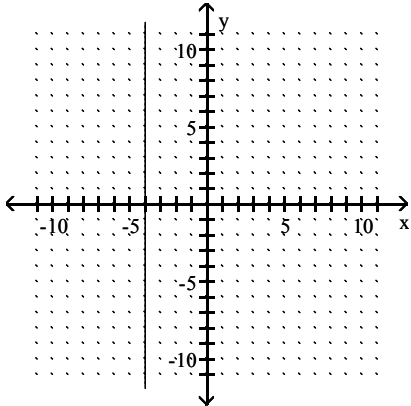
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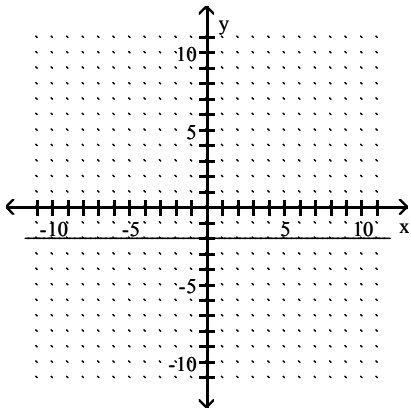
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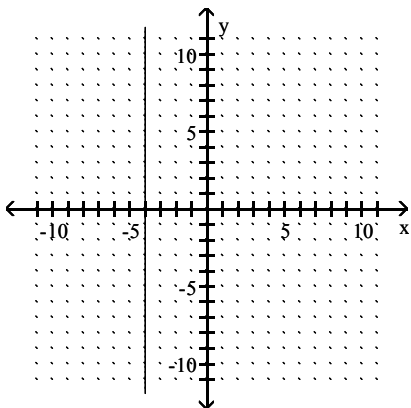
68) 0

69) $-\dfrac{4}{3}$

70) undefined

71) 3

72) 0

73) undefined

74) Solid line

75) $-\dfrac{2}{3}$

76) 4

77) $\dfrac{4}{3}$

78) $-\dfrac{2}{5}$

79) m = 2; b = 16

80) m = 3; The cost of the service increases $3 every mile the car is towed. b = 80; The cost of the service is $80 if the car is not towed.

81) m = 700; The altitude of the airplane increases 700 feet every minute. b = 3386; The altitude of the airport where the airplane took–off is 3386 feet above sea level.

82) 0

83) 0

84) undefined

85) neither

86) perpendicular

87) parallel

88) neither

89) $\dfrac{6}{5}$

90) $-\dfrac{1}{3}$

91) $\dfrac{1}{2}$
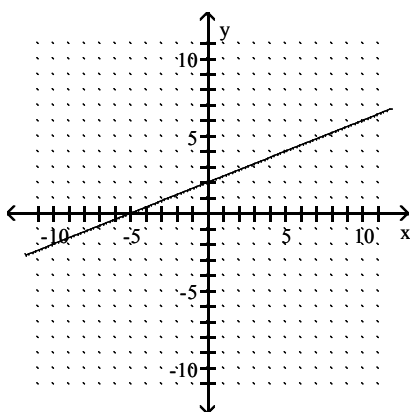
92) $\dfrac{8}{7}$

93) y = 5x + 1

94)
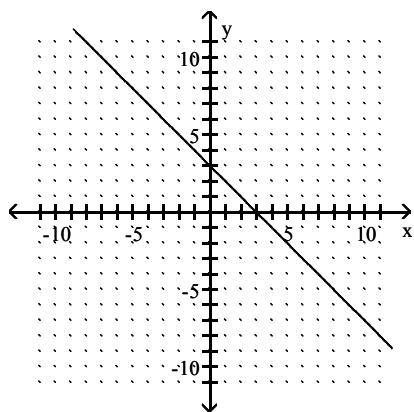
95)
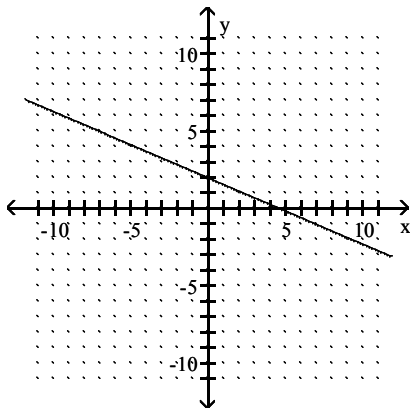
96)
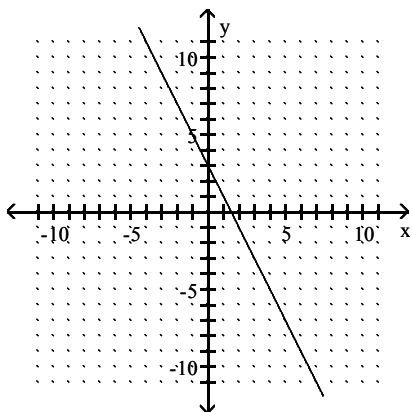
97)

98) $y = 3x + 17$

99) $y = \dfrac{5}{4}x + 4$

100) $f(x) = 8x + 5$

101) $f(x) = \dfrac{1}{3}x + \dfrac{1}{8}$

102) $y = -\dfrac{2}{9}x + \dfrac{35}{9}$

103) $9x - y = 4$

104) $7x + 3y = 16$

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105) $-4x + y = 6$
106) $4x + y = 8$
107) $y = 2$
108) $y = 5$
109) $x = 9$
110) $x = -9$
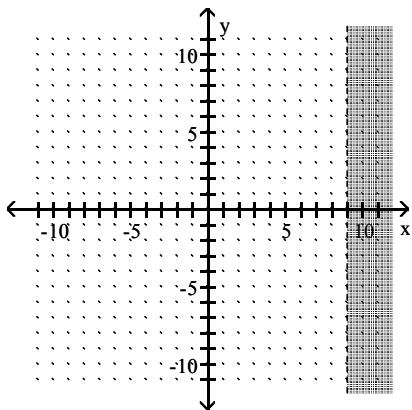111) $y = -5$
112) $f(x) = 5x - 24$
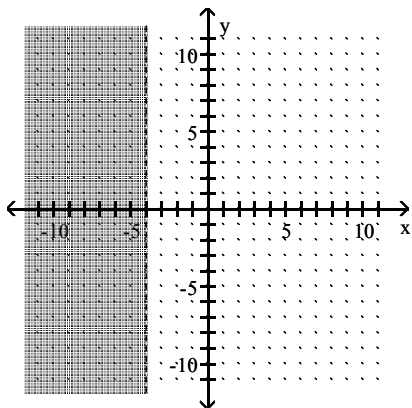113) $f(x) = 5x - 19$
114) $9x + 2y = 33$
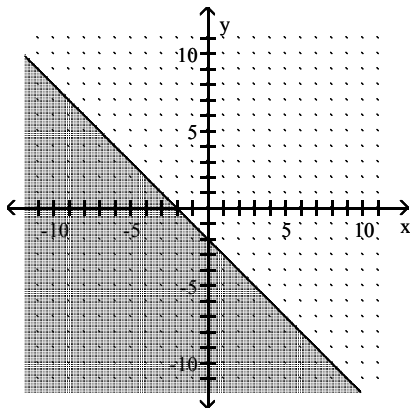115) $y = 9$
116) $x = 9$
117) $3x + 2y = 19$
118)

119)

120)

121)

122)

123)