Exam

Name_____

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

For the set, list all elements that belong to the specified set.

1) $\left\{0, \sqrt{7}, -14, \frac{5}{7}, -\frac{7}{5}, 5.9, 2\right\}$; Integers 1) _____

A) 16, $\sqrt{7}$ B) 0, -14, 2 C) 16 D) 16, -14

2) $\left\{16, \sqrt{7}, -17, 0, \frac{4}{7}, -\frac{7}{4}, 5.9\right\}$; Whole numbers 2) _____

A) 16 B) 16, -17, 0 C) 16, 0 D) 16, -17

3) $\left\{\sqrt{8}, -12, 0, \frac{4}{9}, -\frac{9}{4}, 6.8, 4\right\}$; Natural numbers 3) _____

A) 4 B) 0 C) -12, 0 D) 0, 4

4) {4, $\sqrt{5}$, -19, 0}; Real numbers 4) _____

A) 4 B) 4, 0 C) 4, $\sqrt{5}$, -19, 0 D) 4, -19, 0

5) {15, $\sqrt{5}$, -22, 0, 0.13}; Rational numbers 5) _____

A) 15, 0 B) 15, -22, 0, 0.13 C) $\sqrt{5}$ D) $\sqrt{5}$, 0.13

6) {3, $\sqrt{7}$, -11, 0, 0.79}; Irrational numbers 6) _____

A) $\sqrt{7}$, 0.79 B) $\sqrt{7}$ C) $\sqrt{7}$, -11 D) $\sqrt{7}$, 0, 0.79

For the measured quantity, state the set of numbers that is most appropriate to describe it. Choose from the natural numbers, integers, and rational numbers.

7) Number of students in various high schools 7) _____

A) Integers B) Natural numbers C) Rational numbers

8) Hat sizes 8) _____

A) Integers B) Rational numbers C) Natural numbers

9) Temperatures given in a weather forecast for Alaska 9) _____

A) Rational numbers B) Integers C) Natural numbers

10) High temperatures during heat waves in California 10) _____

A) Rational numbers B) Natural numbers C) Integers

11) Net annual incomes of local manufacturers, in dollars 11) _____

A) Natural numbers B) Rational numbers C) Integers

12) The lengths of randomly cut pieces of string (measured using a ruler) 12) _____

A) Integers B) Natural numbers C) Rational numbers

13) The populations of armies of termites living in the walls of houses 13) _____

A) Rational numbers B) Integers C) Natural numbers

14) The lengths of randomly cut pieces of string (measured to the nearest inch) 14) _____

A) Rational numbers B) Integers C) Natural numbers

15) The average speeds of race cars for one lap at Wilmot Speedway 15) _____

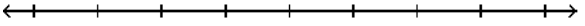
A) Natural numbers B) Rational numbers C) Integers

16) The number of cars sold in an average month at Bob's Auto Sales 16) _____

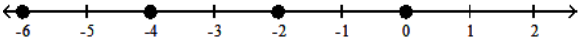
A) Rational numbers B) Natural numbers C) Integers

Graph the set of numbers on a number line.

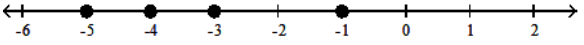
17) {-5, -3, -1, 1} 17) _____



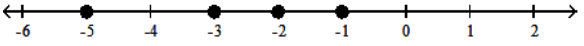
A)



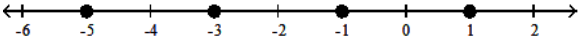
B)



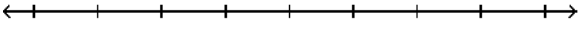
C)



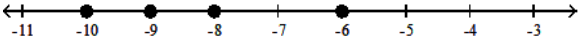
D)



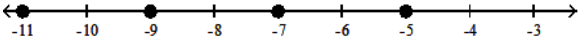
18) {-10, -8, -6, -4} 18) _____



A)



B)



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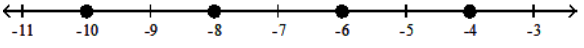
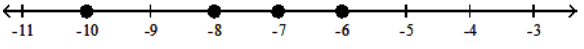
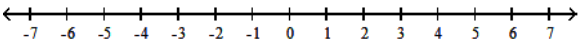


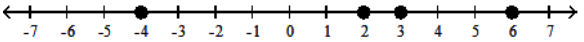
D)



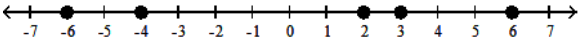
19) $\{-4, -6, 6, 2, 3\}$ 19) _____



A)

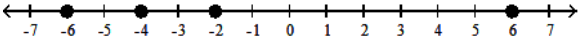


B)

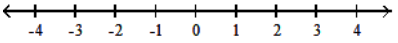


C)

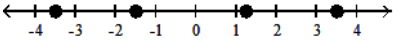
D)



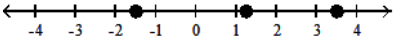
20) $\{-1.5, 1.25, 3.5, -3.5\}$ 20) _____



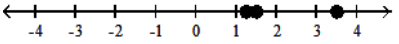
A)



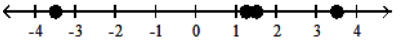
B)



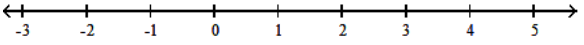
C)



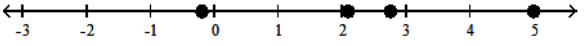
D)



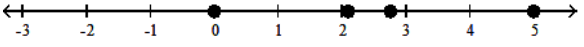
21) $\left\{-0.2, 2.1, \frac{11}{4}, 5\right\}$ 21) _____



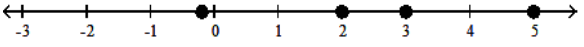
A)



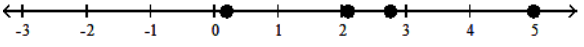
B)



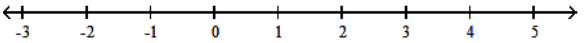
C)



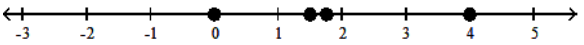
D)



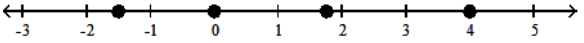
22) $\left\{-\frac{3}{2}, 0, \frac{7}{4}, 4\right\}$ 22) _____



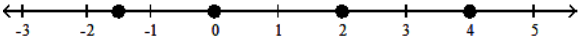
A)



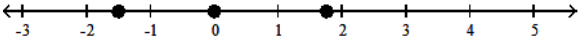
B)



C)



D)



Locate the point on a rectangular coordinate system. Identify the quadrant , if any, in which the point lies.

23) (17, 20) 23) _____

A) I B) IV C) II D) III

24) (6, -3) 24) _____

A) III B) II C) I D) IV

25) (-17, 16) 25) _____

A) III B) II C) IV D) None

26) (-17, -4) 26) _____

A) III B) II C) I D) IV

27) $\left(-\frac{1}{2}, 0\right)$ 27) _____

A) IV B) III C) II D) None

28) $\left(-\frac{4}{7}, \frac{3}{4}\right)$ 28) _____

A) IV B) I C) II D) None

29) (0, 0) 29) _____

A) IV B) II C) I D) None

Name the possible quadrants in which the point (x, y) can lie if the condition is true.

30) $yx < 0$ 30) _____

A) II or III B) III or IV C) I or II D) II or IV

31) $0 < xy$ 31) _____

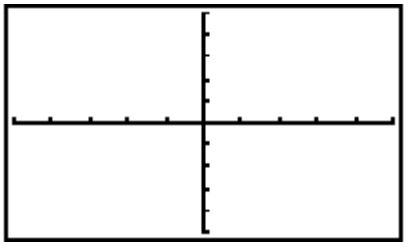
A) I or III B) III or IV C) II or IV D) II or III

32) $\frac{y}{x} < 0$ 32) _____

A) III or IV B) II or III C) I or II D) II or IV

Give the values of Xmin, Xmax, Ymin, and Ymax for the screen, given the values for Xscl and Yscl.

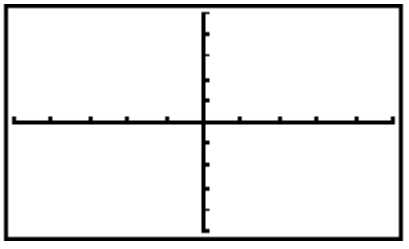
33) 33) _____



Xscl = 1, Yscl = 1

A) [10, -10] by [10, -10]
B) [-5, 5] by [-5, 5]
C) [5, -5] by [5, -5]
D) [-10, 10] by [-10, 10]

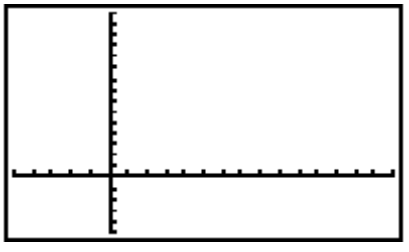
34) 34) _____



Xscl = 2, Yscl; = 2

A) [5, -5] by [5, -5]
B) [10, -10] by [10, -10]
C) [-5, 5] by [-5, 5]
D) [-10, 10] by [-10, 10]

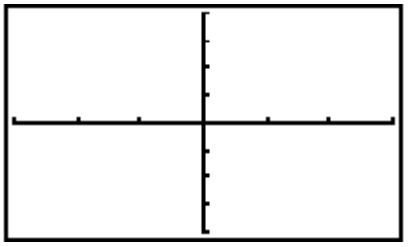
35) 35) _____



Xscl = 1, Yscl = 1

A) [-15, 5] by [-15, 5]
B) [5, -15] by [5, -15]
C) [-5, 15] by [-5, 15]
D) [15, -5] by [15, -5]

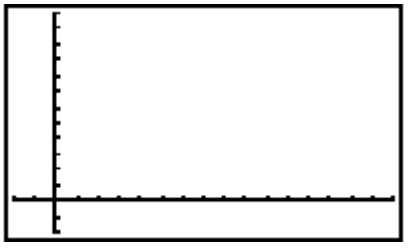
36) 36) _____



Xscl = 10, Yscl = 10

A) [-40, 40] by [-30, 30]
B) [-3, 3] by [-4, 4]
C) [-4, 4] by [-3, 3]
D) [-30, 30] by [-40, 40]

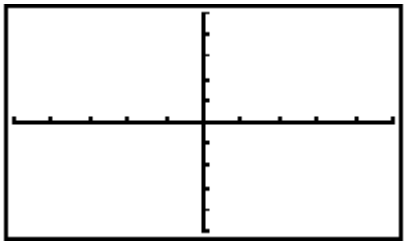
37) 37) _____



Xscl = 5, Yscl = 5

A) [-10, 60] by [-10, 80]
B) [-2, 16] by [-2, 12]
C) [-10, 80] by [-10, 60]
D) [-2, 12] by [-2, 16]

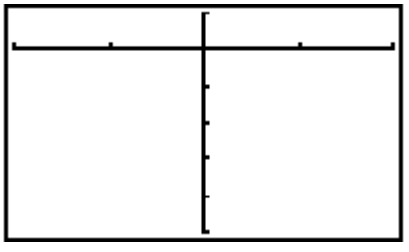
38) 38) _____



Xscl = 4, Yscl = 2

A) [-10, 10] by [-10, 10]
B) [-20, 20] by [-10, 10]
C) [-5, 5] by [-5, 5]
D) [-10, 10] by [-20, 20]

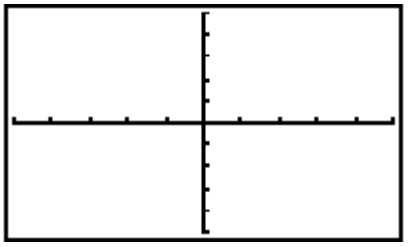
39) 39) _____



Xscl = 15, Yscl = 10

A) [-2, 2] by [-5, 1]
B) [-20, 20] by [-10, 50]
C) [-50, 10] by [-30, 30]
D) [-30, 30] by [-50, 10]

40) 40) _____



Xscl = 2, Yscl = .2

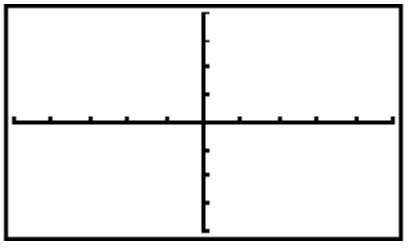
A) [-10, 10] by [-10, 10]
B) [-1, 1] by [-10, 10]
C) [-10, 10] by [-1, 1]
D) [-5, 5] by [-5, 5]

41) 41) _____

Xscl = 7, Yscl = 8

A) [-2, 3] by [-4, 5]
B) [-4, 5] by [-2, 3]
C) [-28, 35] by [-16, 24]
D) [-16, 24] by [-28, 35]

42) 42) _____



Xscl = .3, Yscl = .5

A) [-1.5, 1.5] by [-2, 2]
B) [-15, 15] by [-20, 20]
C) [-4, 4] by [-5, 5]
D) [-5, 5] by [-4, 4]

Find a decimal approximation of the root or power. Round the answer to the nearest thousandth.

43) $\sqrt{7}$ 43) _____

A) 2.643 B) 7.000 C) 2.646 D) 2.651

44) $\sqrt{98}$ 44) _____

A) 98.000 B) 9.904 C) 9.899 D) 9.896

45) $\sqrt{822}$ 45) _____

A) 822.000 B) 28.668 C) 28.676 D) 28.671

46) $\sqrt{3624}$ 46) _____

A) 60.197 B) 60.205 C) 3624.000 D) 60.200

47) $\sqrt{139}$ 47) _____

A) 11.777 B) 11.790 C) 11.805 D) 11.000

48) $56^{1/3}$ 48) _____

A) 3136 B) 3.826 C) -56 D) 175,616

49) $\sqrt[4]{281}$ 49) _____

A) 4.094 B) 16.763 C) -16.763 D) -4.094

50) $3^{1/7}$ 50) _____

A) -21.000 B) 1.17 C) 21.000 D) 0.429

51) $\sqrt[3]{221}$ 51) _____

A) 5.046 B) 6.746 C) 6.046 D) 8.346

Approximate the expression to the nearest thousandth.

52) $\sqrt{85 + \pi^3}$ 52) _____

A) 11.758 B) 10.771 C) 8.3 D) 11.795

53) $|4 - \pi^2|$ 53) _____

A) -7.881 B) -5.87 C) 7.882 D) 5.87

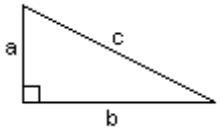
54) $\dfrac{4.72 - 10.31}{24.1 + 3.7}$ 54) _____

A) -0.201 B) -0.155 C) -0.144 D) -0.136

55) $7.7(3.2^2) - 2(6.4) + 6$ 55) _____

A) -0.952 B) 66.048 C) 72.048 D) 78.048

Find the length of the unknown side of the right triangle. In each case, a and b represent the lengths of the legs and c represents the length of the hypotenuse.



56) a = 5, b = 12; find c 56) _____

A) 119 B) 169 C) 13 D) $\sqrt{119}$

57) a = 7, c = 25; find b 57) _____

A) $\sqrt{674}$ B) 625 C) 674 D) 24

58) $a = \sqrt{3}$, $b = \sqrt{14}$; find c 58) _____

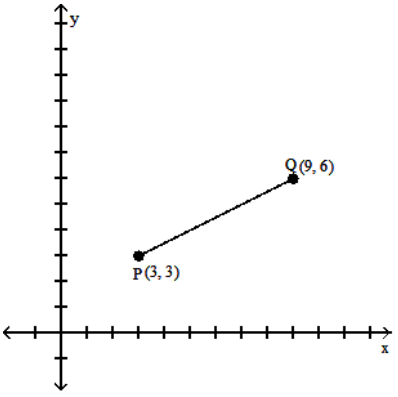
A) 205 B) 17 C) $\sqrt{17}$ D) $\sqrt{205}$

59) b = 9, c = 15; find a 59) _____

A) 14 B) 12 C) 15 D) 11

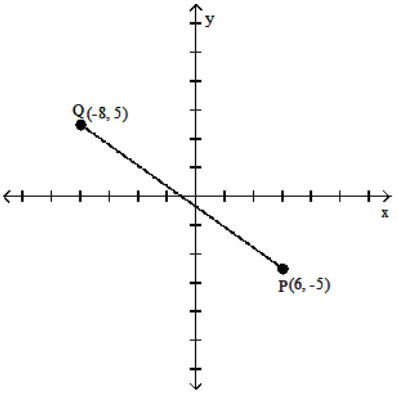
Find the distance between P and Q and the coordinates of the midpoint of the segment joining P and Q.

60) 60) _____



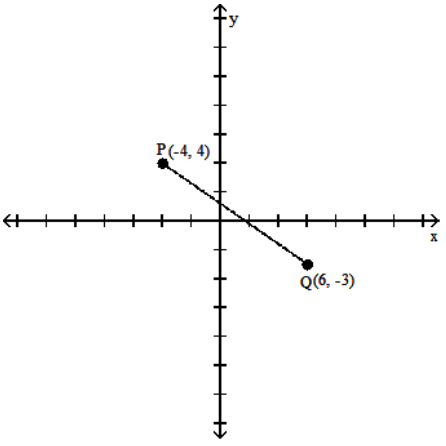
A) $9; (12, 9)$ B) $9; (-6, -3)$ C) $3\sqrt{5}; \left(\frac{9}{2}, 6\right)$ D) $3\sqrt{5}; \left(6, \frac{9}{2}\right)$

61) 61) _____



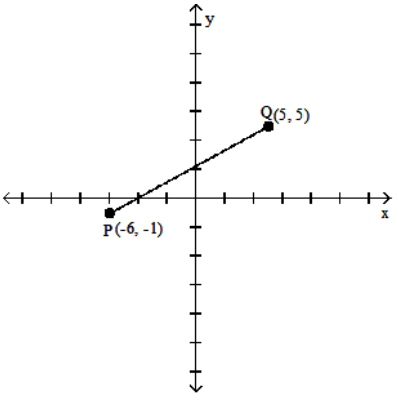
A) $4; (14, -10)$ B) $2\sqrt{74}; (-1, 0)$ C) $4; (-2, 0)$ D) $2\sqrt{74}; (0, -1)$

62) 62) _____



A) $\sqrt{149}; \left(\frac{1}{2}, 1\right)$ B) $\sqrt{149}; \left(\frac{1}{2}, \frac{3}{2}\right)$ C) $\sqrt{149}; \left(1, \frac{1}{2}\right)$ D) $\sqrt{51}; \left(\frac{3}{2}, \frac{1}{2}\right)$

63) 63) _____



A) $\sqrt{173}; \left(-2, -\frac{1}{2}\right)$ B) $\sqrt{85}; \left(-2, \frac{1}{2}\right)$ C) $\sqrt{157}; \left(-\frac{1}{2}, -2\right)$ D) $\sqrt{157}; \left(-\frac{1}{2}, 2\right)$

64) P(2, 6), Q(4, 8) 64) _____

A) $4; (-2, -2)$ B) $2\sqrt{2}; (7, 3)$ C) $2\sqrt{2}; (3, 7)$ D) $4; (6, 14)$

65) P(-4, 3), Q(2, 5) 65) _____

A) $8; (-2, 8)$ B) $8; (-6, -2)$ C) $2\sqrt{10}; (4, -1)$ D) $2\sqrt{10}; (-1, 4)$

Suppose that P is the endpoint of a segment PQ and M is the midpoint of PQ. Find the coordinates of endpoint Q.

66) P(6, 3), M(7, 5) 66) _____

A) Q(5, 7) B) Q(14, 10) C) Q(-2, -4) D) Q(8, 7)

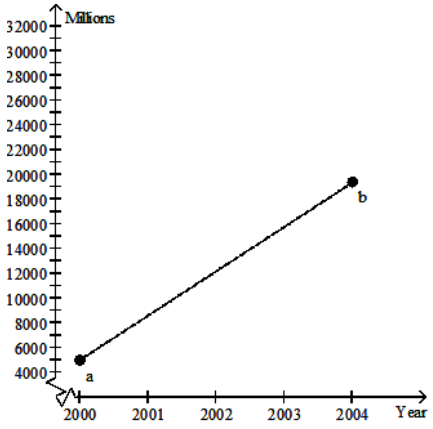
67) P(8, -2), M$\left(3, -\frac{9}{2}\right)$ 67) _____

A) Q$(10, 5)$ B) Q$(6, -9)$ C) Q$\left(-\frac{9}{2}, 3\right)$ D) Q(-2, -7)

Solve the problem.

68) The graph shows the Total Gross Revenue (in millions of dollars) of Top 100 Internet Companies in United States between 2000 and 2004. Use the midpoint formula to estimate the revenue for 2002. 68) _____

Total Gross Revenue of Top 100 Internet Companies

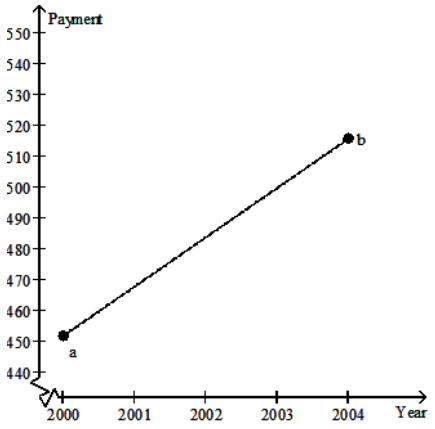


a = 5000 million dollars; b = 19,400 million dollars

A) 46,000 million dollars
B) 14,400 million dollars
C) 17,500 million dollars
D) 12,200 million dollars

69) The graph shows an idealized linear relationship for the average monthly payments (in dollars) to r 69) _____
from 2000 through 2004. Use the midpoint formula to estimate the payment for 2002.

Average Monthly Payments to Retirees



a = $452; b = $516

A) $484 B) $516 C) $500 D) $32

70) The table lists how financial aid income cutoffs (in dollars) for a family of four have changed over 70) _____
time. Use the midpoint formula to approximate the financial aid cutoff for 1985.

Year	Income (in dollars)
1960	20,500
1970	26,000
1980	31,500
1990	37,000
2000	42,500

A) $34,250 B) $20,500 C) $53,500 D) $17,750

71) An isosceles triangle has at least two sides of equal length. Determine whether the triangle with 71) _____
vertices (0, 0), (9, 2), and (11, -7) is isosceles.
A) Yes B) No

72) An isosceles triangle has at least two sides of equal length. Determine whether the triangle with 72) _____
vertices (0, 0), (-7, -3), and (-10, -5) is isosceles.
A) Yes B) No

Provide an appropriate response.

73) Is $\sqrt{9}$ a rational or irrational number? 73) _____
A) Irrational B) Rational
C) Both rational and irrational D) Neither

74) Are both 1 and -8 natural numbers, integers, or irrational numbers? 74) _____

A) Irrational numbers B) Natural numbers
C) Integers D) None of the above

75) Are both 6 and $\sqrt{6}$ natural numbers, integers, or irrational numbers? 75) _____

A) Natural numbers B) Irrational numbers
C) Integers D) None of the above

76) Are both $\sqrt{6}$ and $\sqrt{5}$ natural numbers, integers, or irrational numbers? 76) _____

A) Integers B) Natural numbers
C) Irrational numbers D) None of the above

77) In what quadrant of the cartesian system does P(-10, 9) lie? 77) _____

A) I B) II C) III D) IV

78) In what quadrant of the cartesian system does P(10, 9) lie? 78) _____

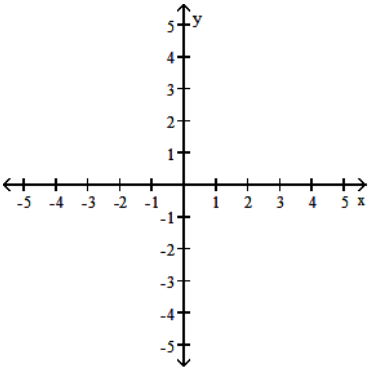
A) I B) II C) IV D) III

79) In what quadrant of the xy-plane would you plot P(-9, -2) ? 79) _____

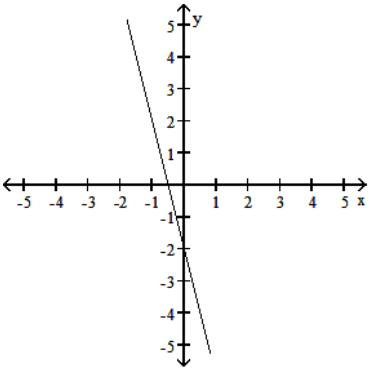
A) IV B) III C) I D) II

Sketch the graph of f.

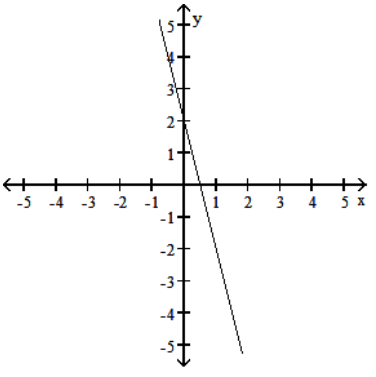
80) f(x) = -4x + 2 80) _____



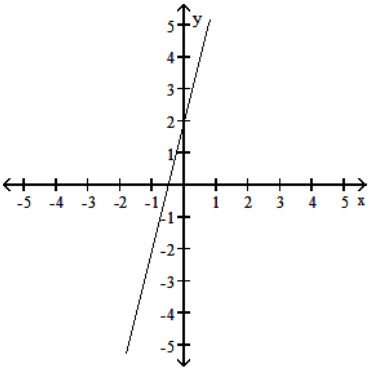
A)



B)



C)



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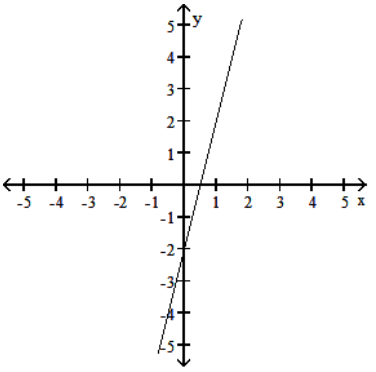
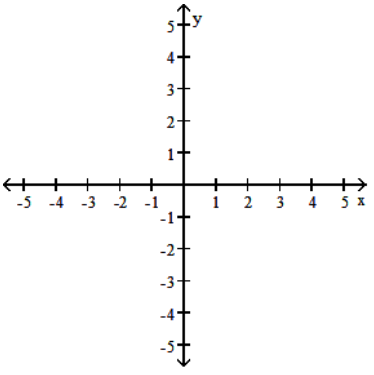
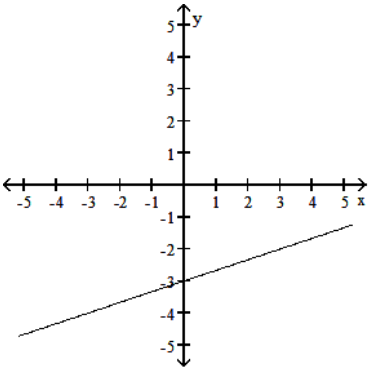


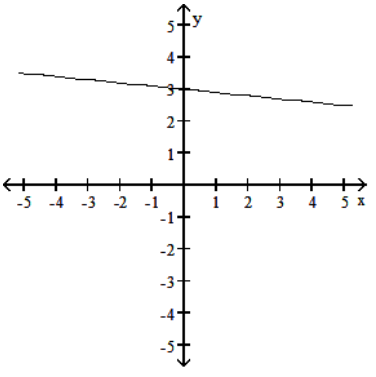
81) $f(x) = \frac{1}{3}x - 3$ 81) _____



A)



B)



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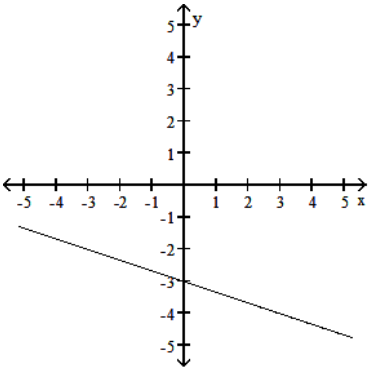
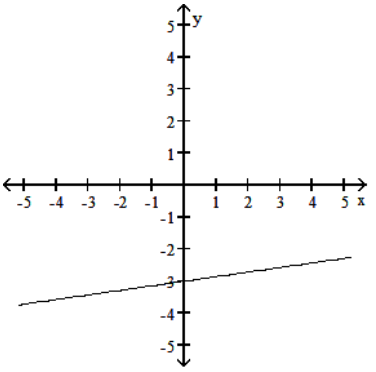
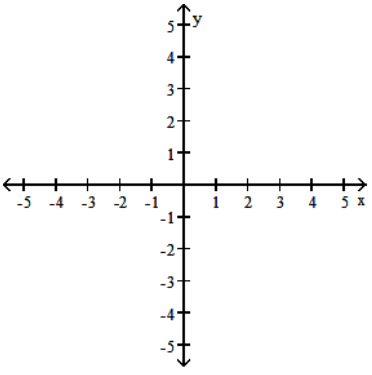


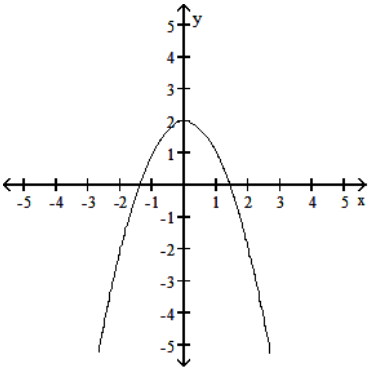
D)



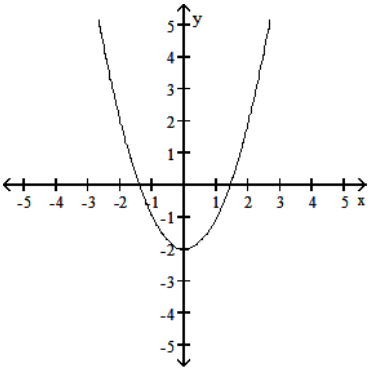
82) $f(x) = x^2 - 2$ 82) _____



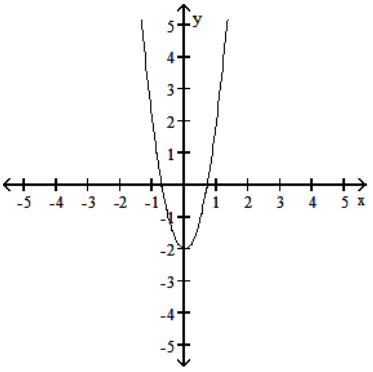
A)



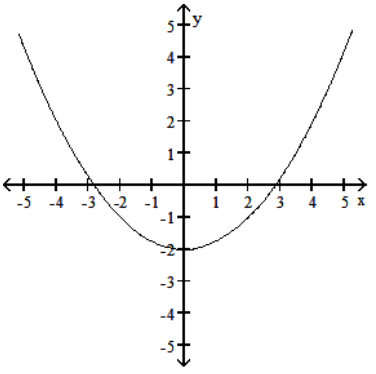
B)



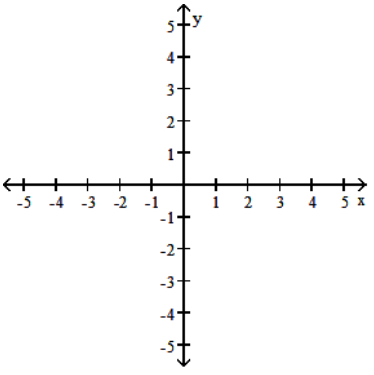
C)



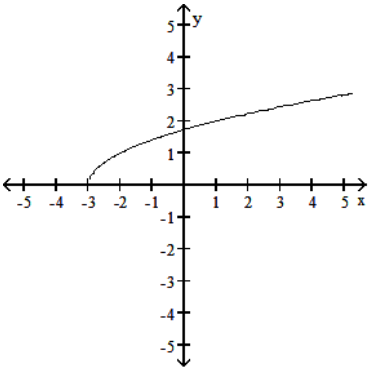
D)



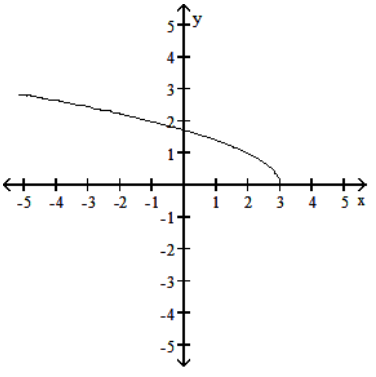
83) $f(x) = \sqrt{x + 3}$ 83) _____



A)



B)



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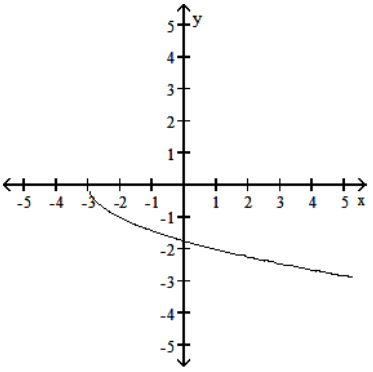
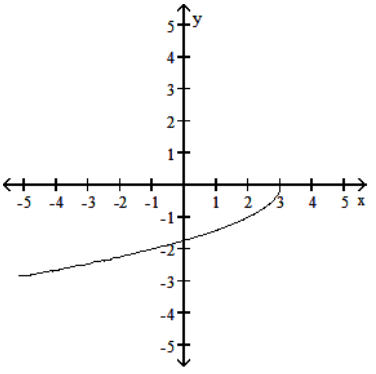
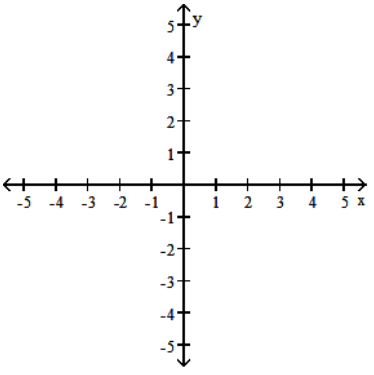


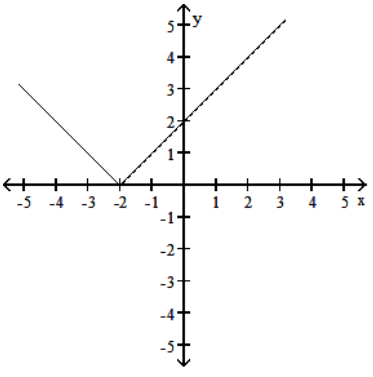
D)



84) $f(x) = |x| - 2$ 84) _____



A)



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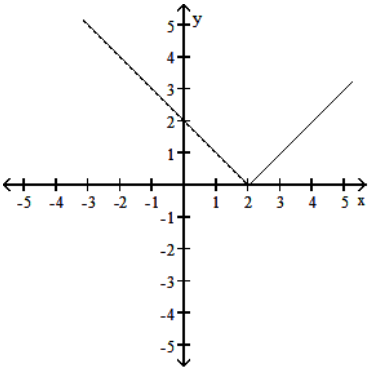
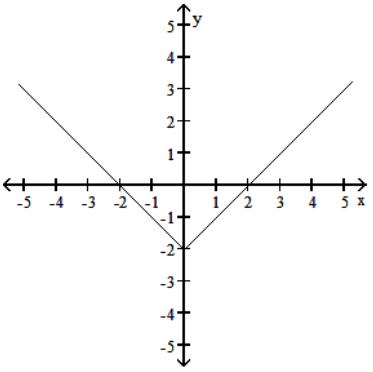
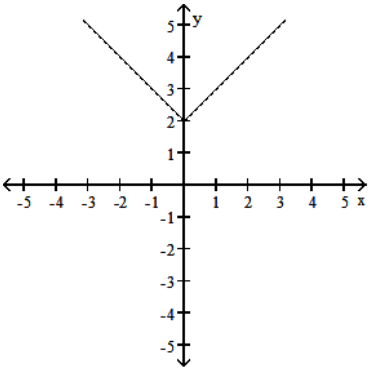


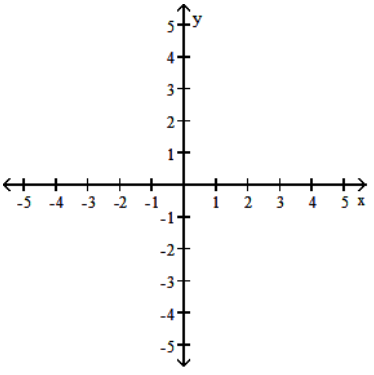
C)



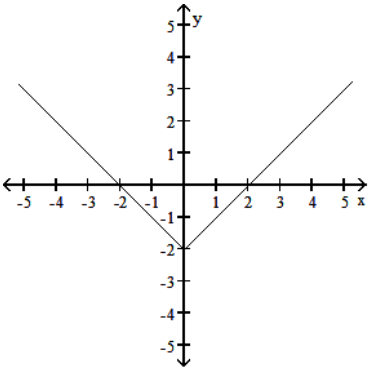
D)



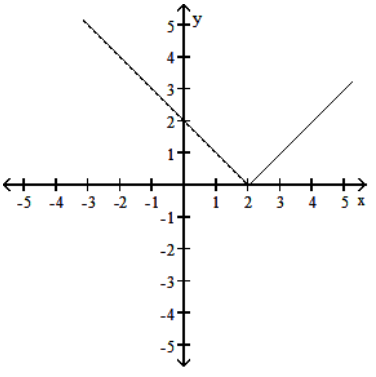
85) $f(x) = |x - 2|$ 85) _____



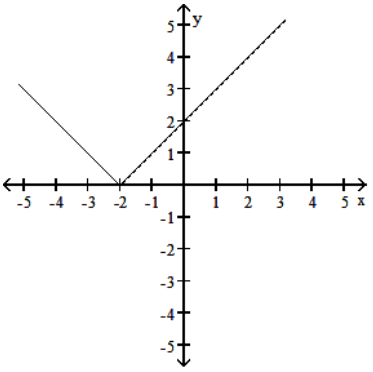
A)



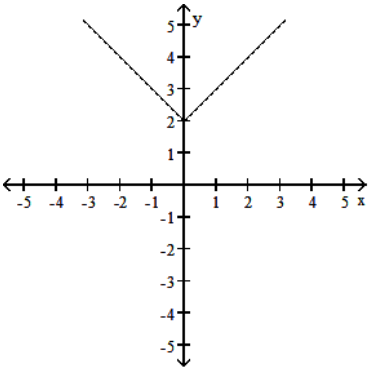
B)



C)



D)



Using interval notation, write the set.

86) $\{x \mid x > 13\}$ 86) _____

A) $[13, \infty]$ B) $(13, \infty]$ C) $(13, \infty)$ D) $[13, \infty)$

87) $\{x \mid -10 < x < 9\}$ 87) _____

A) $(-10, 9)$ B) $[-10, 9)$ C) $(-10, 9]$ D) $[-10, 9]$

88) $\{x \mid x < 3\}$ 88) _____

A) $(-\infty, 3)$ B) $[-\infty, 3]$ C) $[-\infty, 3)$ D) $(-\infty, 3]$

89) $\{x \mid x \geq 4\}$ 89) _____

A) $[4, \infty]$ B) $[4, \infty)$ C) $(4, \infty)$ D) $(4, \infty]$

90) $\{x \mid x \leq 5\}$ 90) _____

A) $[-\infty, 5]$ B) $(-\infty, 5)$ C) $[-\infty, 5)$ D) $(-\infty, 5]$

91) $\{x \mid -7 \leq x \leq 9\}$ 91) _____

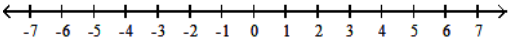
A) $(-7, 9)$ B) $(-7, 9]$ C) $[-7, 9)$ D) $[-7, 9]$

92) $\{x \mid -3 < x \leq 10\}$ 92) _____

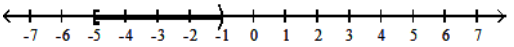
A) $(-3, 10]$ B) $[-3, 10]$ C) $[-3, 10)$ D) $(-3, 10)$

Graph the set on a number line.

93) (-5, -1] 93) _____



A)



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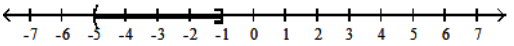
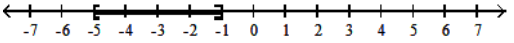
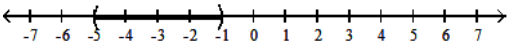


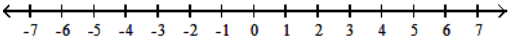
C)



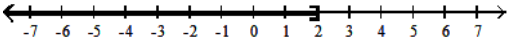
D)



94) (2, ∞) 94) _____



A)



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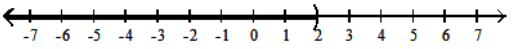
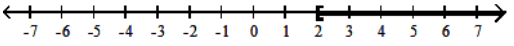
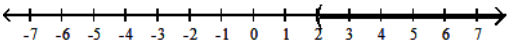


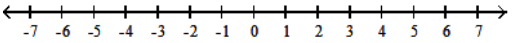
C)



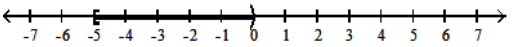
D)



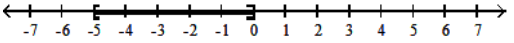
95) [-5, 0] 95) _____



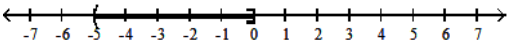
A)



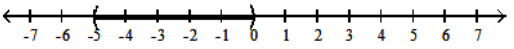
B)



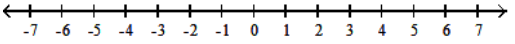
C)



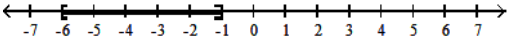
D)



96) [-6, -1) 96) _____



A)



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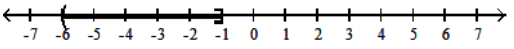

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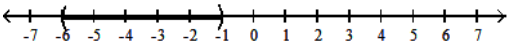
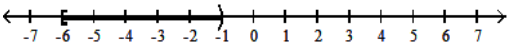
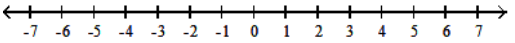


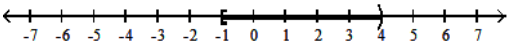
D)



97) (-1, 4) 97) _____



A)



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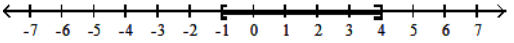

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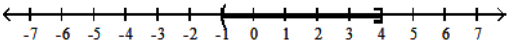
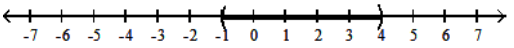
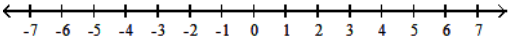


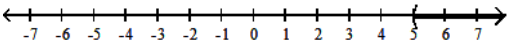
D)



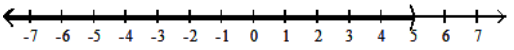
98) (-∞, 5] 98) _____



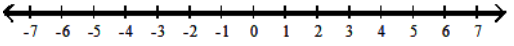
A)



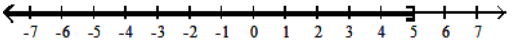
B)



C)



D)



Using the variable x, write the interval using set-builder notation.

99) (-9, 4] 99) _____

A) $\{x \mid x \le 4\}$ B) $\{x \mid -9 \le x \le 4\}$ C) $\{x \mid -9 < x \le 4\}$ D) $\{x \mid -9 < x < 4\}$

100) [-9, 7) 100) _____

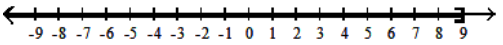
A) $\{x \mid -9 \le x \le 7\}$ B) $\{x \mid -9 < x \le 7\}$ C) $\{x \mid x < 7\}$ D) $\{x \mid -9 \le x < 7\}$

101) $\left(-\infty, \frac{1}{5}\right]$ 101) _____

A) $\{x \mid 5 \le x \le 1\}$ B) $\left\{x \mid x > \frac{1}{5}\right\}$ C) $\left\{x \mid x < \frac{1}{5}\right\}$ D) $\left\{x \mid x \le \frac{1}{5}\right\}$

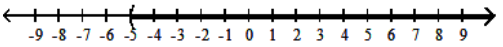
102) $\left(-\infty, \frac{3}{4}\right]$ 102) _____

A) $\left\{x \mid x \le \frac{3}{4}\right\}$ B) $\left\{x \mid x > \frac{3}{4}\right\}$ C) $\left\{x \mid x < \frac{3}{4}\right\}$ D) $\{x \mid 4 \le x \le 3\}$

103) 

103) _____

A) $\{x \mid x > 9\}$ B) $\{x \mid x \ge 9\}$ C) $\{x \mid x < 9\}$ D) $\{x \mid x \le 9\}$

104) 

104) _____

A) $\{x \mid x \le -5\}$ B) $\{x \mid x \ge -5\}$ C) $\{x \mid x < -5\}$ D) $\{x \mid x > -5\}$

Determine the domain and range of the relation.

105) $\{(11, -3), (-1, 8), (-3, 4), (-8, 1), (-5, 9)\}$ 105) _____

A) Domain: $\{1, -5, 9, -1, 8\}$; range: $\{-3, 4, 11, -3, -8\}$
B) Domain: $\{4, -3, 1, 9, 8\}$; range: $\{-3, 11, -8, -5, -1\}$
C) Domain: $\{-3, 11, -8, -5, -1\}$; range: $\{4, -3, 1, 9, 8\}$
D) Domain: $\{-3, 4, 11, -3, -8\}$; range:$\{1, -5, 9, -1, 8\}$

106) $\{(3, 8), (-8, -8), (4, 5), (4, 9)\}$ 106) _____

A) Domain: $\{4, -8, 3\}$; range: $\{5, -8, 8, 9\}$
B) Domain: $\{4, -8, 3, -4\}$; range: $\{5, -8, 8, 9\}$
C) Domain: $\{5, -8, 8, 9\}$; range: $\{4, -8, 3\}$
D) Domain: $\{4, -8, 3, 4\}$; range: $\{5, -8, 8, 9\}$

107) $\{(7, -7), (7, -4), (-3, 3), (9, 7), (1, 4)\}$ 107) _____

A) Domain: $\{7, 9, 1, -3\}$; range: $\{-4, 7, 4, 3, -7\}$
B) Domain: $\{7, -2, 9, 1, -3\}$; range: $\{-4, 7, 4, 3, -7\}$
C) Domain: $\{-4, 7, 4, 3, -7\}$; range: $\{7, 7, 9, 1, -3\}$
D) Domain: $\{7, 7, 9, 1, -3\}$; range: $\{-4, 7, 4, 3, -7\}$

108) $\{(-6, -2), (6, 1), (-2, 9), (-2, 4)\}$ 108) _____

A) Domain: $\{6, -2, -6, 2\}$; range: $\{1, 9, -2, 4\}$
B) Domain: $\{6, -2, -6\}$; range: $\{1, 9, -2, 4\}$
C) Domain: $\{6, -2, -6, -2\}$; range: $\{1, 9, -2, 4\}$
D) Domain: $\{1, 9, -2, 4\}$; range: $\{6, -2, -6\}$

109) $\{(8, 6), (-8, -3), (2, 7), (12, -7)\}$ 109) _____

A) Domain: $\{8, 2, -8, 12\}$; range: $\{6, -6, 7, -3, -7\}$
B) Domain: $\{8, 2, -8, 12\}$; range: $\{6, 6, 7, -3, -7\}$
C) Domain: $\{6, 7, -3, -7\}$; range: $\{8, 2, -8, 12\}$
D) Domain: $\{8, 2, -8, 12\}$; range: $\{6, 7, -3, -7\}$

Tell whether the relation is a function.

110) $\{(-2, 6), (2, -9), (5, 9), (8, -3), (11, -3)\}$ 110) _____

A) Function B) Not a function

111) $\{(-6, 3), (-2, -8), (3, -3), (3, 9)\}$ 111) _____

A) Function B) Not a function

112) $\{(-8, -8), (1, 9), (6, -9), (-8, -6), (7, 9)\}$ 112) _____

A) Function B) Not a function

113) {(9, -4), (3, -7), (5, -1), (11, -1), (3, 2)} 113) _____

A) Function B) Not a function

114) {(-6, -4), (-1, 5), (3, 2), (6, 5)} 114) _____

A) Function B) Not a function

115) {(10, 6), (-7, -9), (1, -4), (3, -5), (-7, -2)} 115) _____

A) Function B) Not a function

116) {(-6, 9), (-5, 7), (-2, -4), (2, 1)} 116) _____

A) Function B) Not a function

117) {(-5, 7), (-3, 8), (-1, 9), (-1, 4)} 117) _____

A) Function B) Not a function

118) {(-5, -9), (-2, -5), (3, -5), (5, 5)} 118) _____

A) Function B) Not a function

119) {(-3, -1), (1, 7), (5, -7), (8, 8), (10, 1)} 119) _____

A) Function B) Not a function

120) 120) _____

x	-1	1	6	8	12
y	7	-3	9	7	3

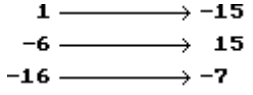
A) Function B) Not a function

121) 121) _____

x	-6	-6	-1	4	7
y	6	-1	9	-5	-1

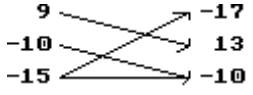
A) Function B) Not a function

122) 122) _____



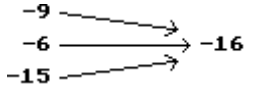
A) Function B) Not a function

123) 123) _____

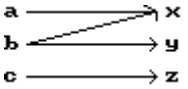


A) Function B) Not a function

124) 124) _____



A) Function B) Not a function

125) 

125) _____

A) Function B) Not a function

126)

X	Y1
-3	-6
-2	-5
-1	-4
0	-3
1	-4
2	-5
3	-6

X= -3

126) _____

A) Function B) Not a function

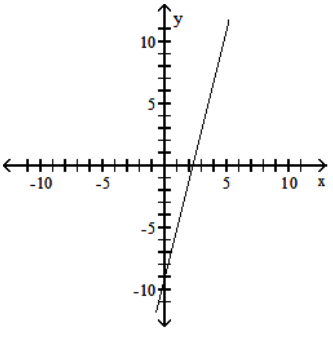
127)

X	Y1
-6	-3
-5	-2
-4	-1
-3	0
-4	1
-5	2
-6	3

X= -6

127) _____

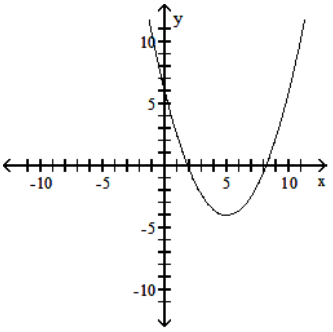
A) Function B) Not a function

128) 

128) _____

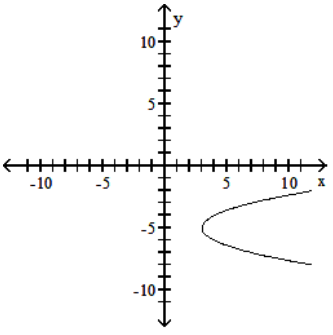
A) Function B) Not a function

129) 129) _____



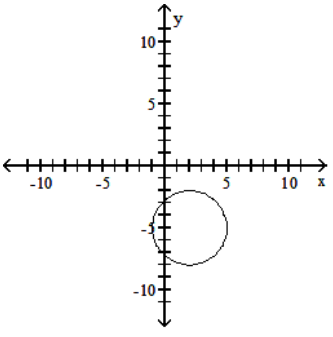
A) Function B) Not a function

130) 130) _____



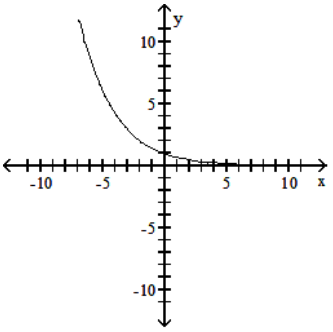
A) Function B) Not a function

131) 131) _____



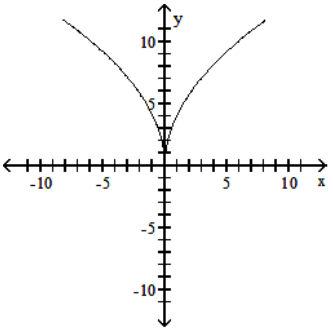
A) Function B) Not a function

132) 132) _____



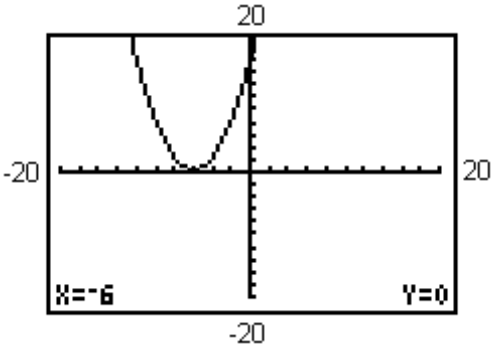
A) Function B) Not a function

133) 133) _____



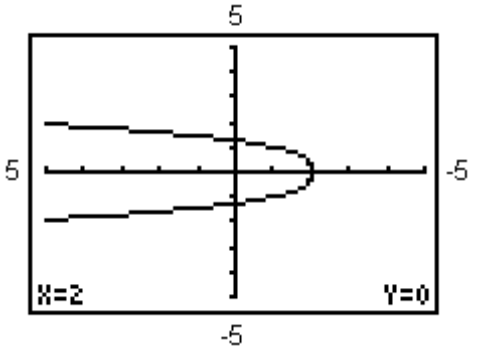
A) Function B) Not a function

134) 134) _____



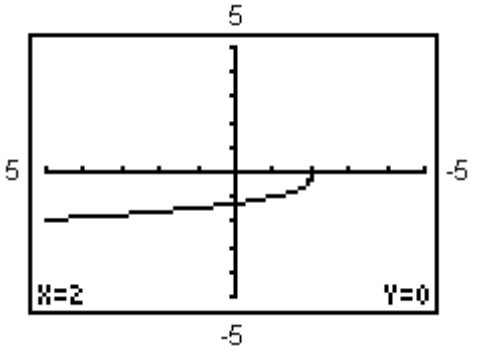
A) Function B) Not a function

135) 135) _____



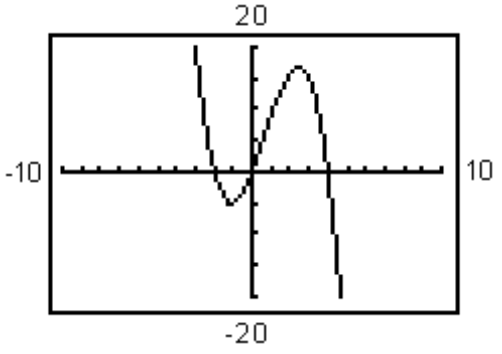
A) Function B) Not a function

136) 136) _____



A) Function B) Not a Function

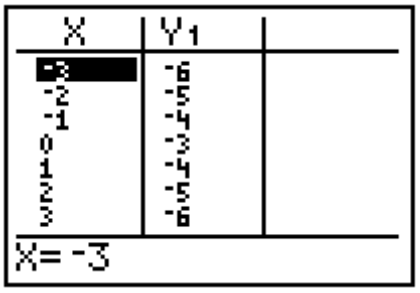
137) 137) _____



A) Function B) Not a function

Find the function value.

138) 138) _____



X	Y1
-3	-6
-2	-5
-1	-4
0	-3
1	-4
2	-5
3	-6

X= -3

f(2) if f(x) = Y_1

A) -6 B) -5 C) -3 D) -4

139) 139) _____

$$\begin{array}{rcr} & f & \\ 1 & \longrightarrow & -15 \\ -6 & \longrightarrow & 15 \\ -16 & \longrightarrow & -7 \end{array}$$

f(-6) for the function f

A) -7 B) 15 C) -16 D) -15

140) 140) _____

x	-3	1	6	8	11
y	-8	2	4	-8	7

f(1) if f(x) = y

A) 7 B) 2 C) -8 D) 4

Find f(x) at the indicated value of x.

141) f(x) = -6x - 4, x = 3 141) _____

A) -3 B) 12 C) -22 D) -6

142) f(x) = -7x - 1, x = 0 142) _____

A) -8 B) -1 C) 1 D) -0

143) f(x) = -7x + 0, x = -2 143) _____

A) -9 B) -0 C) 14 D) 7

144) f(x) = 18x - 15, x = 0 144) _____

A) -15 B) 18 C) 0 D) 3

145) f(x) = $7x^2$ - 3x - 2, x = 2 145) _____

A) 6 B) 20 C) 16 D) 10

146) f(x) = $-2x^2$ - 4x - 3, x = -2 146) _____

A) -13 B) -3 C) 9 D) -7

147) f(x) = $\sqrt{x}$, x = 169 147) _____

A) 15 B) 13 C) 26 D) 28,561

148) f(x) = 3, x = 7 148) _____

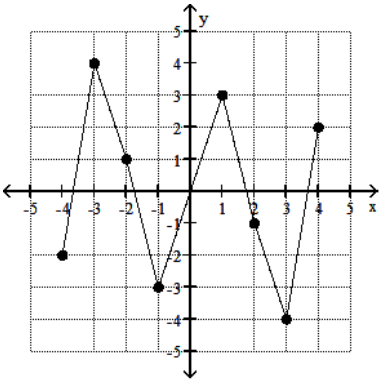
A) 10 B) 7 C) 21 D) 3

149) f(x) = |3 - x|, x = 9 149) _____

A) 27 B) 12 C) 6 D) -6

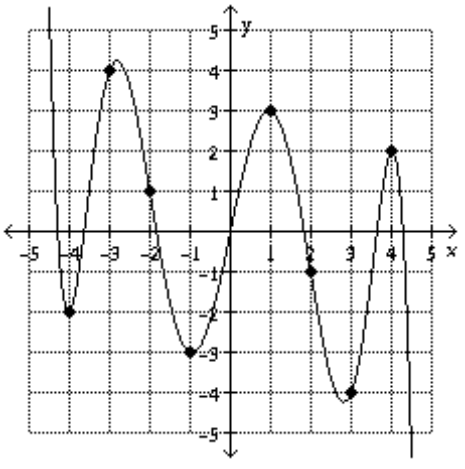
Use the graph of y = f(x) to find the function value.

150) f(3) 150) _____



A) 4 B) -1 C) -4 D) 1

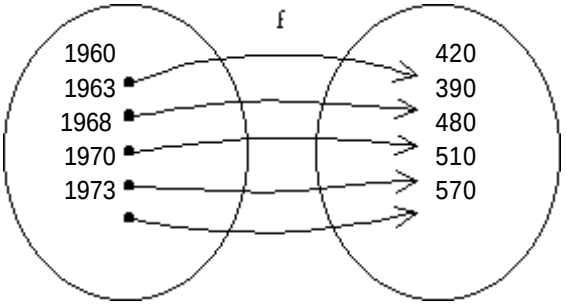
151) f(3) 151) _____



A) 1 B) -1 C) 4 D) -4

Solve the problem.

152) The function f, given in the diagram below, computes the average cost of an item during year x. Evaluate f(1968). 152) _____



A) 510 B) 480 C) 570 D) 420

153) The function given by the equation f(x) = 3.785x will convert x gallons into y = f(x) liters. If a container will hold 50 gallons, how many liters will it hold? Round your answer to the nearest hundredth, if necessary. 153) _____

A) 189.25 liters B) 189.82 liters C) 188.55 liters D) 189.39 liters

154) Bob finds that the cost of driving his truck is 67 cents per mile. Give a numerical representation, in the form of a table, for a function f that computes the cost in dollars of driving x miles. Let x = 10, 20, 30, 40, 50, 60. 154) _____

A)

x	10	20	30	40	50	60
y	14.93	29.85	44.78	59.70	74.63	89.55

B)

x	10	20	30	40	50	60
y	10.67	20.67	30.67	89.55	0.07	0.03

C)

x	10	20	30	40	50	60
y	6.70	13.40	20.10	26.80	33.50	40.20

D)

x	10	20	30	40	50	60
y	0.07	0.03	0.02	0.02	0.01	0.01

155) The following table lists the monthly precipitation P, in inches, in Salem, Missouri, where x = 1 corresponds to January and x = 9 corresponds to September. 155) _____

x	1	2	3	4	5	6	7	8	9
P	1.2	1.5	0.6	1.3	2.3	2.1	1.6	0.7	1.4

Determine the value of P during June.

A) 3.1 inches B) 1.9 inches C) 2.4 inches D) 2.1 inches

Provide an appropriate response.

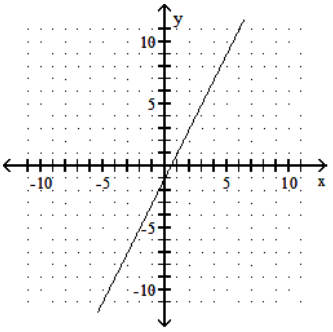
156) Using set-builder notation, a set S is written as $\{x \mid -7 \le x < 2\}$. Which of the elements of the following set is not an element of S: $\{1, -2, 2, -7\}$ 156) _____

A) -7 B) 1 C) 2 D) -2

157) For the function f(x) = $-3x - 1$, with domain of $[-1, \infty)$, find the range. 157) _____

A) $[2, \infty)$ B) $(-\infty, -4]$ C) $[4, 2]$ D) $(-\infty, 2]$

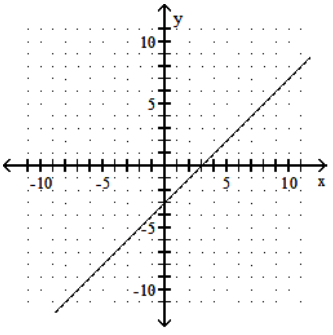
158) 158) _____



Use the graph of the function above to find the element of the domain that corresponds to the elemei the range that equals -5.

A) -11 B) 0.5 C) 2 D) -2

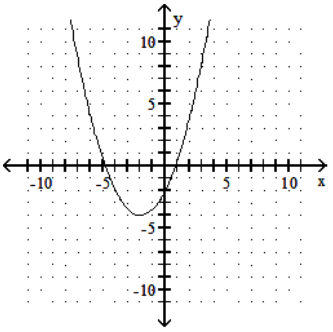
159) 159) _____



Use the graph of the function above to find the element of the range that corresponds to the element the domain that equals 5.

A) 2 B) 8 C) 3 D) -2

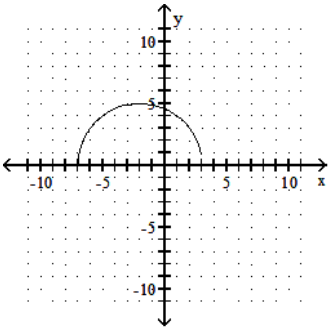
160) 160) _____



Use the graph of the function above to find the element of the range that corresponds to the element the domain that equals -2.

A) 2
B) -4
C) -2
D) None of the above, since -2 is not in the domain of the function.

161) 161) _____

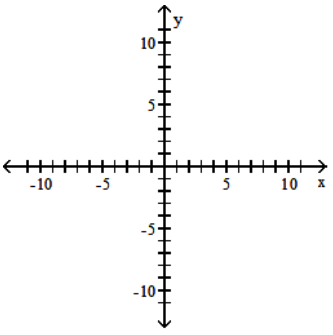


Use the graph of the function above to find the element of the range that corresponds to the element the domain that equals -8.

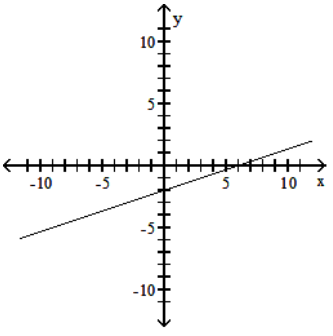
A) -7
B) 5
C) 0
D) None of the above, since -8 is not in the domain of the function.

Graph the line. Also, give the x-intercept (if any), y-intercept (if any), and slope of the line (if defined).

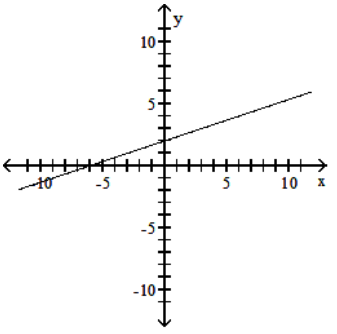
162) $f(x) = \frac{1}{3}x + 2$ 162) _____



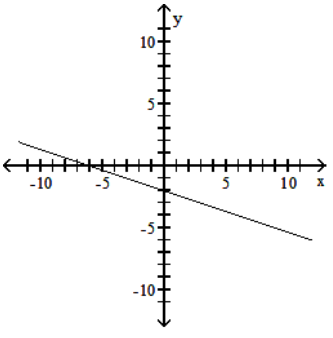
A) x-intercept: (6, 0); y-intercept: (0, -2); slope: $\frac{1}{3}$



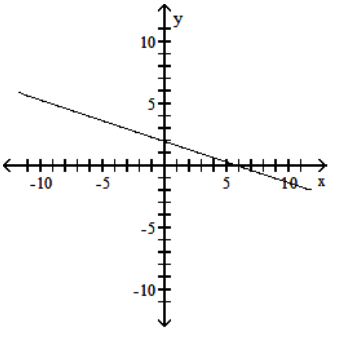
B) x-intercept: (-6, 0); y-intercept: (0, 2); slope: $\frac{1}{3}$



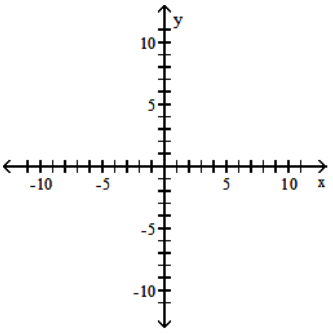
C) x-intercept: (-6, 0); y-intercept: (0, -2); slope: $-\frac{1}{3}$



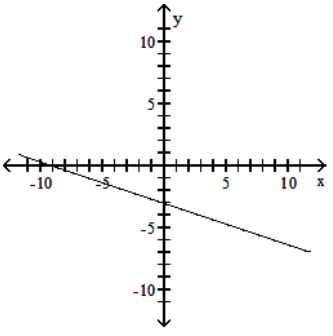
D) x-intercept: (6, 0); y-intercept: (0, 2); slope: $-\frac{1}{3}$



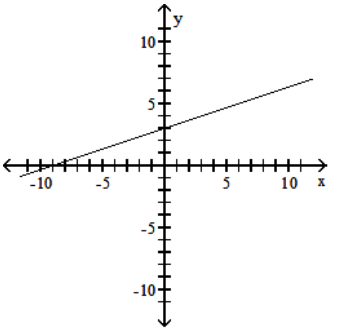
163) $f(x) = -\frac{1}{3}x + 3$ 163) _____



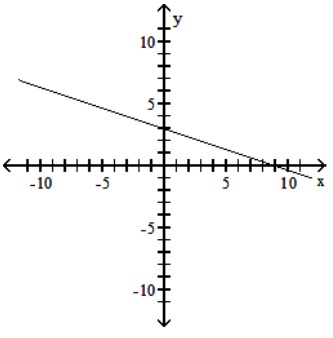
A) x-intercept: (-9, 0); y-intercept: (0, -3); slope: $-\frac{1}{3}$



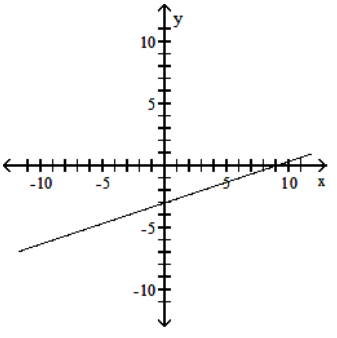
B) x-intercept: (-9, 0); y-intercept: (0, 3); slope: $\frac{1}{3}$



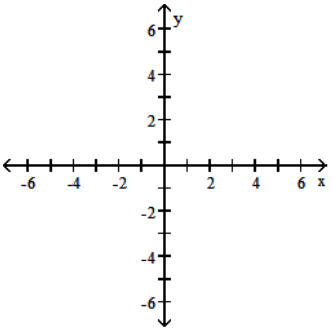
C) x-intercept: (9, 0); y-intercept: (0, 3); slope: $-\frac{1}{3}$



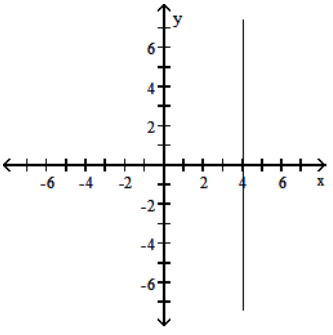
D) x-intercept: (9, 0); y-intercept: (0, -3); slope: $\frac{1}{3}$



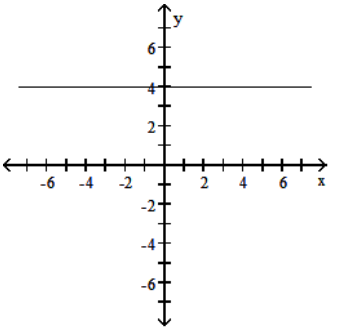
164) f(x) = 4 164) _____



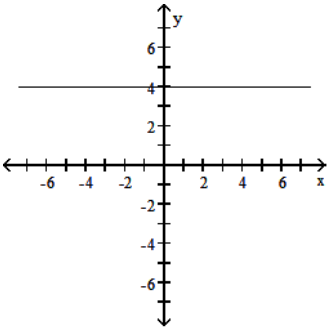
A) x-intercept: (4, 0); y-intercept: none; slope: undefined



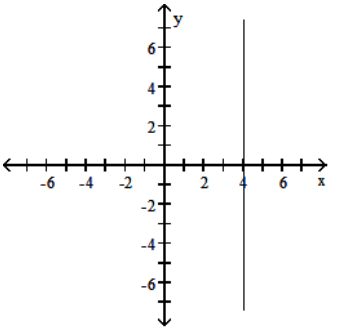
B) x-intercept: none; y-intercept: (0, 4); slope: 0



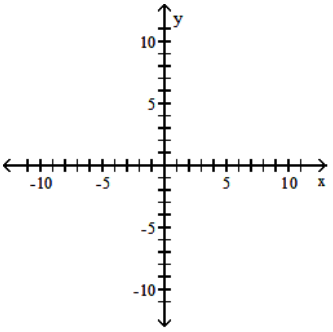
C) x-intercept: none; y-intercept: (0, 4); slope: undefined



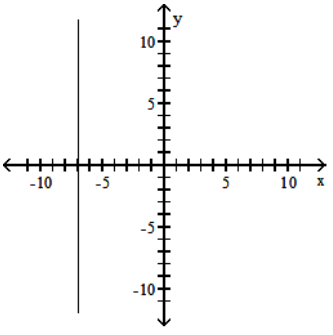
D) x-intercept: (4, 0); y-intercept: none; slope: 0



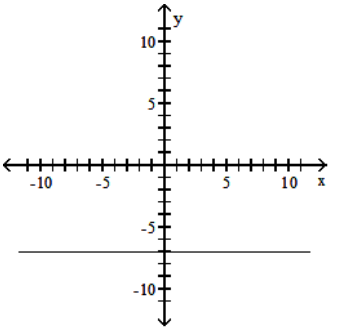
165) x = -7 165) _____



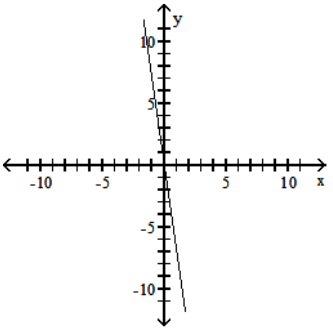
A) x-intercept: (-7, 0); y-intercept: none; slope: undefined



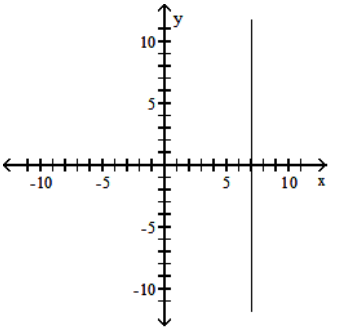
B) x-intercept: none; y-intercept: (0, -7); slope: 0



C) x-intercept: (0, 0); y-intercept: (0, 0); slope: -7

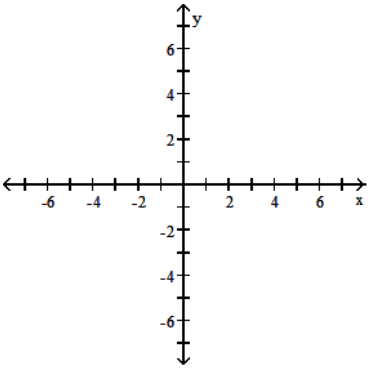


D) x-intercept: (7, 0); y-intercept: none; slope: undefined

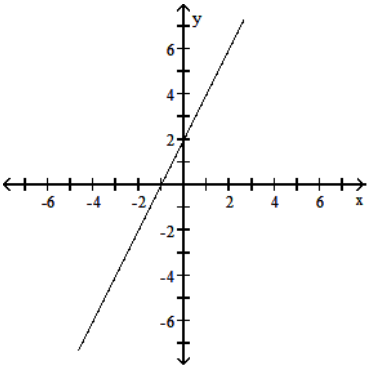


Graph the linear function. Give the domain and range.

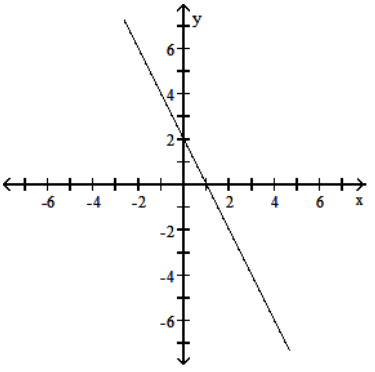
166) $f(x) = 2x + 2$ 166) _____



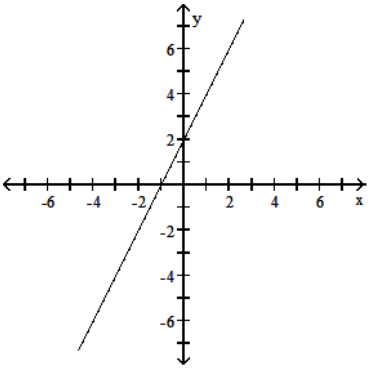
A) Domain: $(-\infty, \infty)$; range: $(-\infty, 6)$



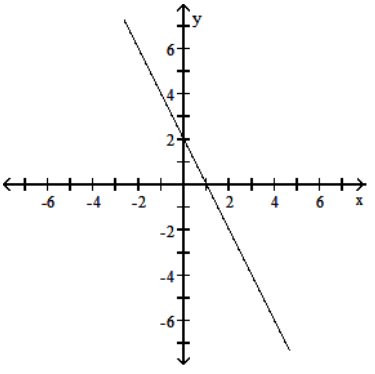
B) Domain: $(-6, 6)$; range: $(6, 6)$



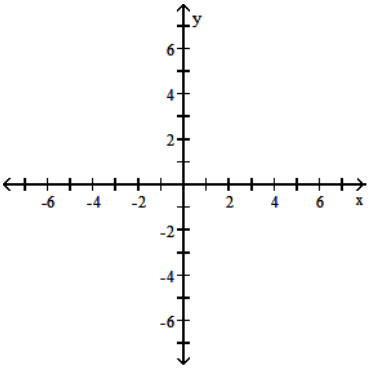
C) Domain: $(-\infty, \infty)$; range: $(-\infty, \infty)$



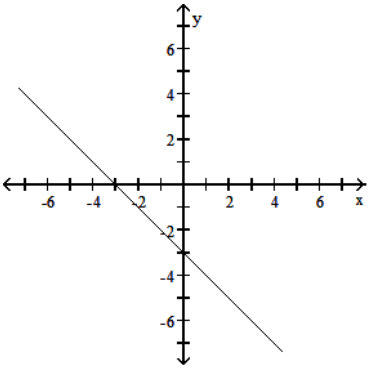
D) Domain: $(-\infty, \infty)$; range: $(-\infty, \infty)$



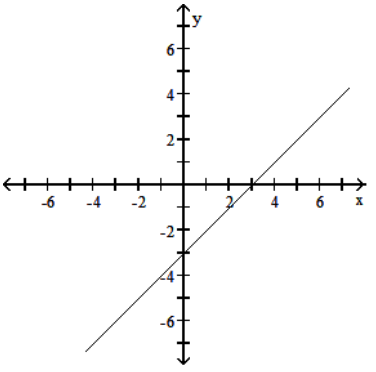
167) f(x) = x - 3 167) _____



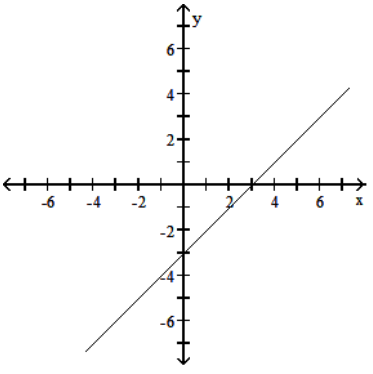
A) Domain: (-∞, ∞); range: (-∞, ∞)



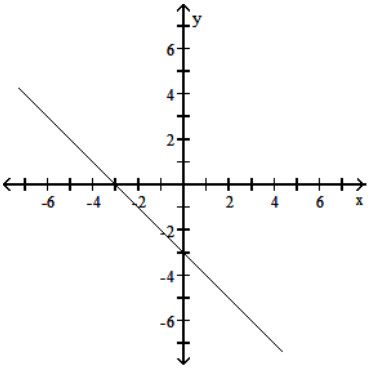
B) Domain: (-∞, ∞); range: (-∞, ∞)



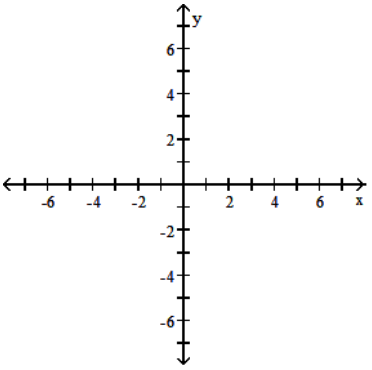
C) Domain: (-∞, ∞); range: (-6, 6)



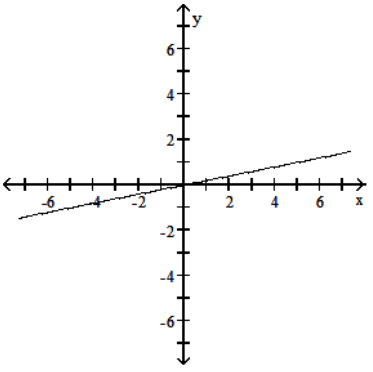
D) Domain: (-6, ∞); range: (-∞, 6)



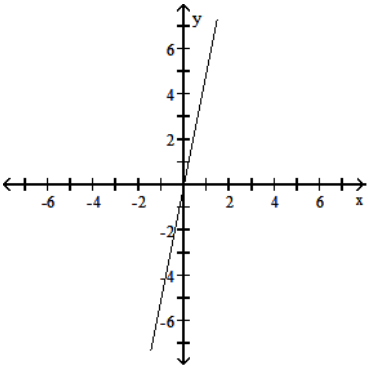
168) f(x) = 5x 168) _____



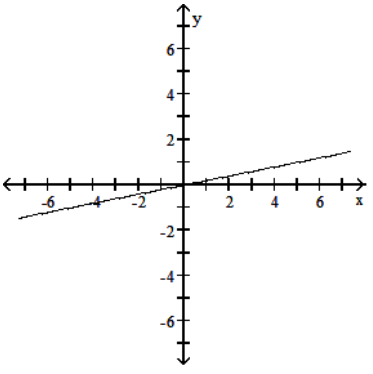
A) Domain: (- ∞, 0); range: (0, ∞)



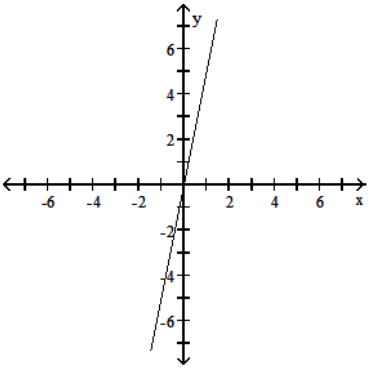
B) Domain: (- ∞, ∞); range: (- ∞, 0)



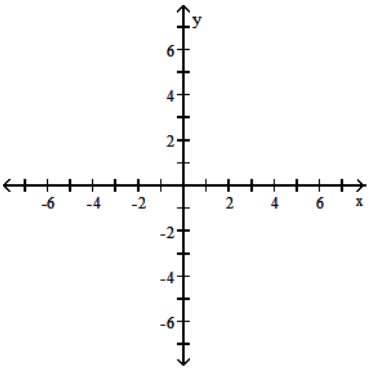
C) Domain: (- ∞, ∞); range: (- ∞, ∞)



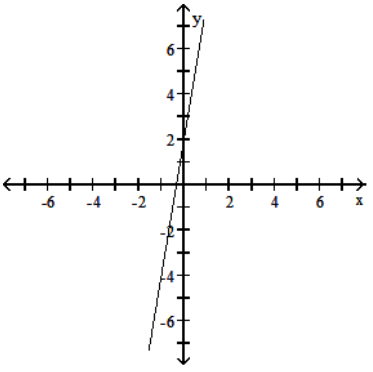
D) Domain: (- ∞, ∞); range: (- ∞, ∞)



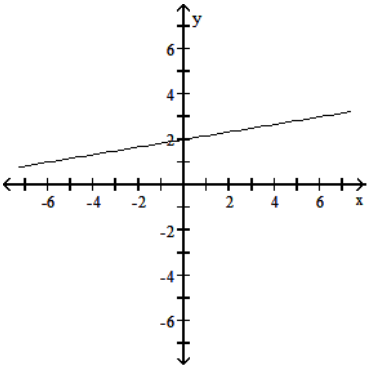
169) $f(x) = \frac{1}{6}x + 2$ 169) _____



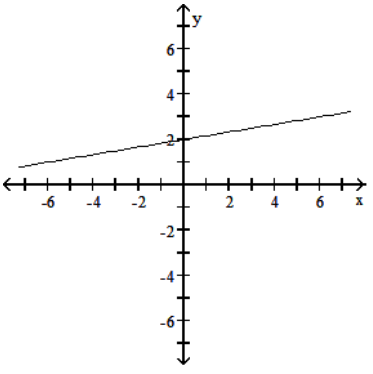
A) Domain: $(-\infty, \infty)$; range: $(-\infty, \infty)$



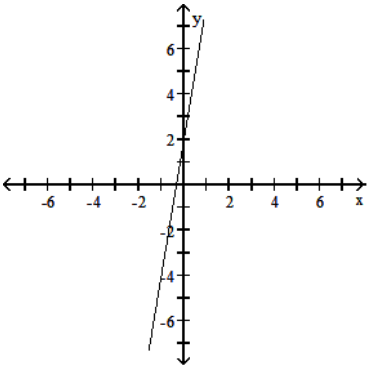
B) Domain: $(-\infty, \infty)$; range: $(-\infty, \infty)$



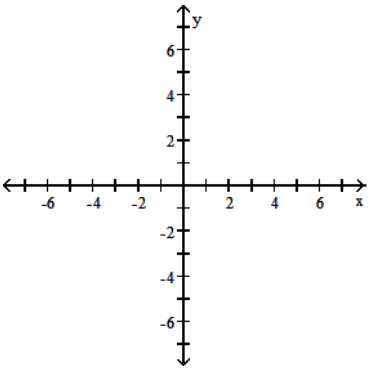
C) Domain: $(-\infty, 0)$; range: $(0, \infty)$



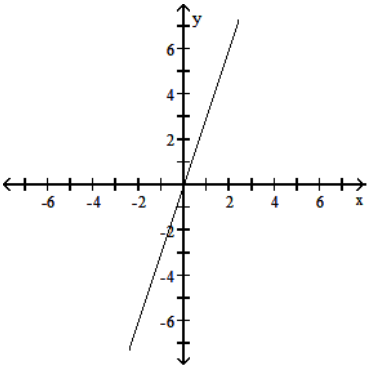
D) Domain: $(-6, 6)$; range: $(-6, 6)$



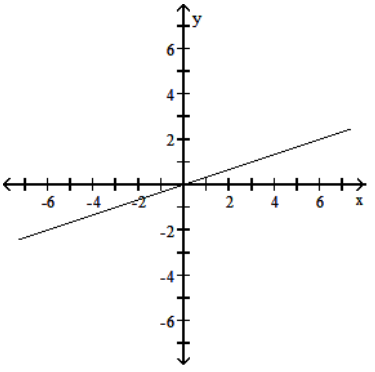
170) $f(x) = \frac{1}{3}x$ 170) _____



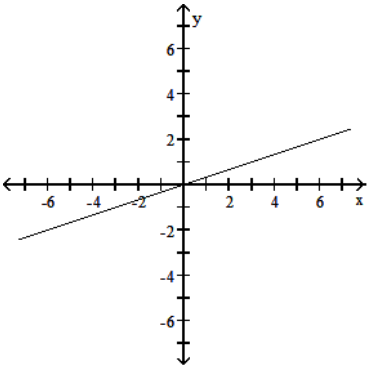
A) Domain: $(-\infty, \infty)$; range: $(-\infty, \infty)$



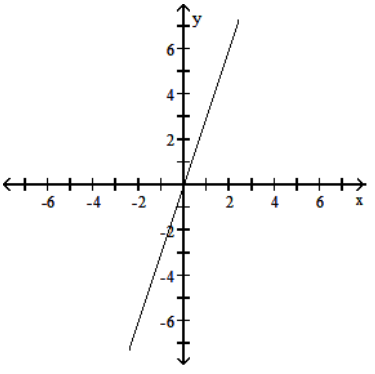
B) Domain: $(-\infty, \infty)$; range: $(0, \infty)$



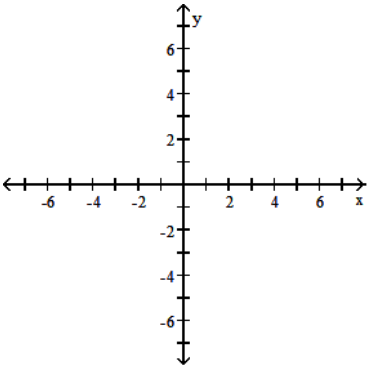
C) Domain: $(-\infty, \infty)$; range: $(-\infty, \infty)$



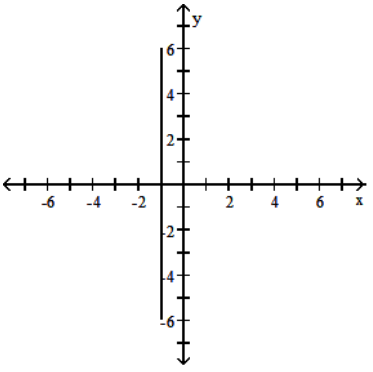
D) Domain: $(-\infty, \infty)$; range: $(0, \infty)$



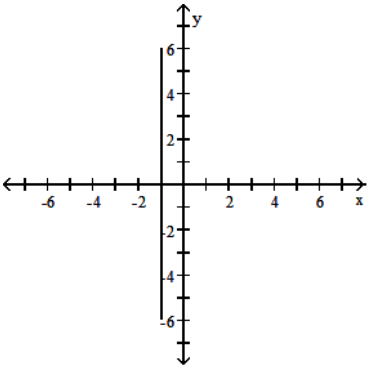
171) f(x) = -1 171) _____



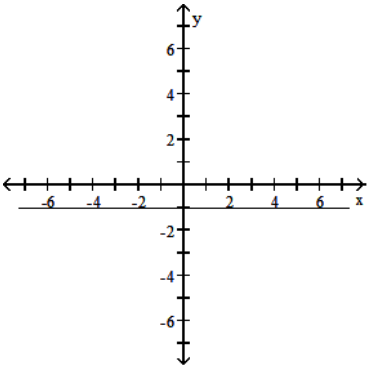
A) Domain: {-1}; range: (-∞, ∞)



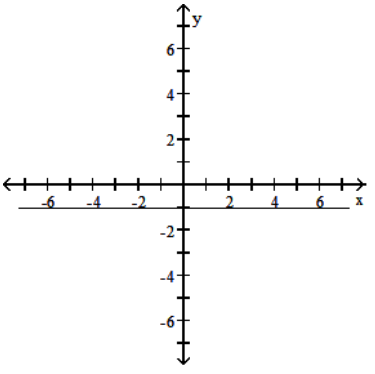
B) Domain: (-∞, ∞); range:{-1}



C) Domain: (-∞, ∞); range:{-1}



D) Domain: {-1}; range: (-∞, ∞)



Evaluate the function.

172) Find f(-5) when f(x) = -11x - 8. 172) _____

A) 63 B) 47 C) 54.2 D) -63

173) Find f(7.8) when f(x) = -7x - 0.08. 173) _____

A) 54.52 B) -55.4 C) -54.52 D) -54.68

174) Find f(-3.5) when f(x) = 3.8x - 19. 174) _____

A) -32.3 B) -5.7 C) 5.7 D) -15.2

175) Find f(-9) when f(x) = $\frac{1}{6}x + \frac{1}{3}$. 175) _____

A) $-\frac{8}{9}$ B) $\frac{11}{6}$ C) $-\frac{4}{3}$ D) $-\frac{7}{6}$

176) Find f(-3.1) when f(x) = 2x + 0.8. 176) _____

A) -6.12 B) -7 C) -5.4 D) 7

177) Find f(-10) when f(x) = $\frac{4 - x}{8}$. 177) _____

A) $\frac{7}{4}$ B) $-\frac{3}{4}$ C) $\frac{11}{2}$ D) 5

Find the zero of f.

178) f(x) = 2x + 4 178) _____

A) -4 B) 2 C) 4 D) -2

179) f(x) = $\frac{1}{4}x + \frac{1}{8}$ 179) _____

A) $\frac{1}{8}$ B) $\frac{1}{2}$ C) $-\frac{1}{8}$ D) $-\frac{1}{2}$

180) f(x) = $\frac{1}{2}x$ 180) _____

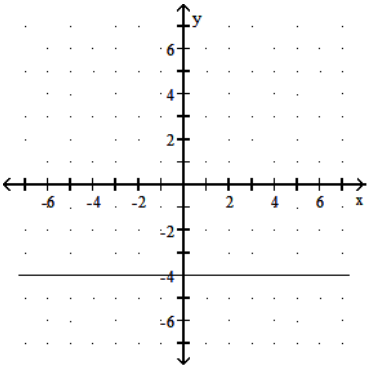
A) 2 B) -2 C) 0 D) Does not exist

181) f(x) = -8x 181) _____

A) -8 B) 8 C) 0 D) Does not exist

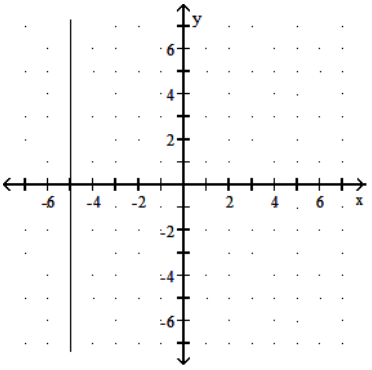
Give the equation of the line illustrated.

182) 182) _____



A) y = -4 B) x = -4 C) x = 4 D) y = 4

183) 183) _____



A) x = 5 B) y = 5 C) y = -5 D) x = -5

Graph the linear function on a graphing calculator, using the window given. State whether the window shows a comprehensive graph.

184) f(x) = 2x - 9; window: [-23, 4] by [-30, 16] 184) _____

A) Yes B) No

Find the slope (if defined) of the line that passes through the given points.

185) (4, 2) and (-6, 7) 185) _____

A) - 2 B) $-\frac{1}{2}$ C) $\frac{1}{2}$ D) $-\frac{9}{2}$

186) (6, -2) and (6, 1) 186) _____

A) $-\frac{1}{12}$ B) Undefined C) 0 D) $-\frac{1}{4}$

187) (-1, -9) and (1, -9) 187) _____

A) 0 B) - 9 C) Undefined D) $\frac{18}{0}$

188) (0.6, 0.5) and (0.9, 0.1) 188) _____

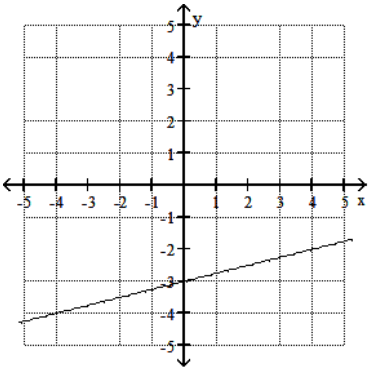
A) $\frac{2}{5}$ B) $-\frac{3}{4}$ C) $-\frac{4}{3}$ D) $\frac{4}{3}$

189) (13, 18) and (-3, 19) 189) _____

A) $-\frac{1}{16}$ B) $\frac{1}{16}$ C) - 16 D) $\frac{37}{10}$

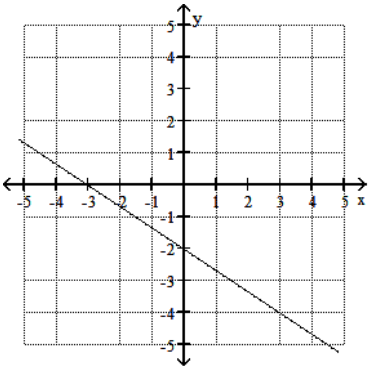
The graph of a linear function f is shown. Identify the slope.

190) 190) _____



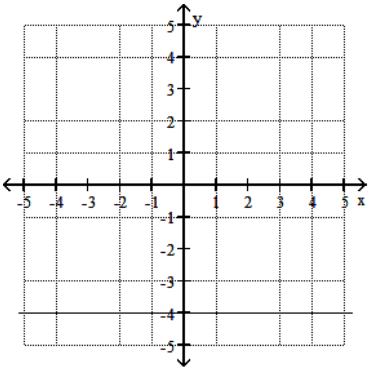
A) -4 B) $\frac{1}{5}$ C) $\frac{1}{4}$ D) 4

191) 191) _____



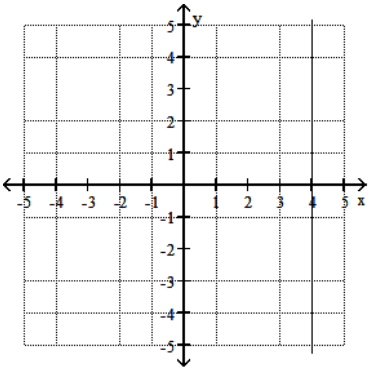
A) $-\frac{2}{3}$ B) $-\frac{3}{2}$ C) $\frac{3}{2}$ D) $\frac{2}{3}$

192) 192) _____



A) 0 B) 1 C) -1 D) Undefined

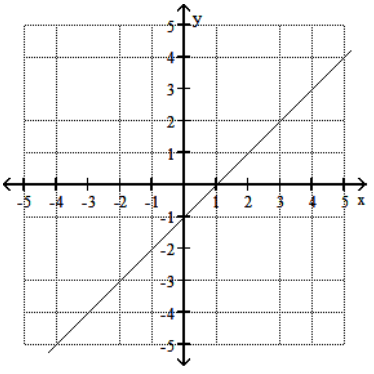
193) 193) _____



A) -1 B) 0 C) $\frac{2}{3}$ D) Undefined

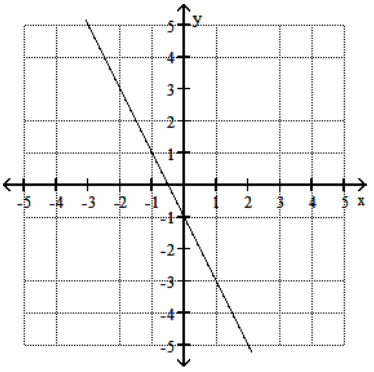
The graph of a linear function f is shown. Identify the y-intercept and x-intercept.

194) 194) _____



A) y-intercept: (0, 1); x-intercept: (-1, 0)
B) y-intercept: (0, 1); x-intercept: (1, 0)
C) y-intercept: (0, -1); x-intercept: (-1, 0)
D) y-intercept: (0, -1); x-intercept: (1, 0)

195) 195) _____



A) y-intercept: (0, 1); x-intercept: $\left(\frac{1}{2}, 0\right)$

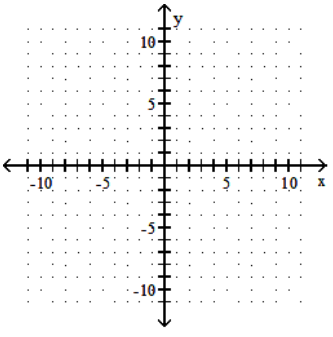
B) y-intercept: (0, -1); x-intercept: $\left(\frac{1}{2}, 0\right)$

C) y-intercept: (0, 1); x-intercept: $\left(-\frac{1}{2}, 0\right)$

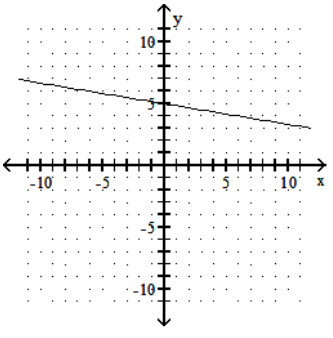
D) y-intercept: (0, -1); x-intercept: $\left(-\frac{1}{2}, 0\right)$

Graph the line passing through the given point and having the given slope.

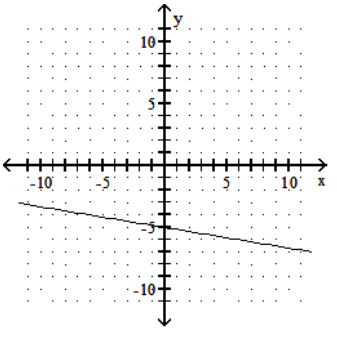
196) Through (0, 5), m = $\frac{1}{6}$ 196) _____



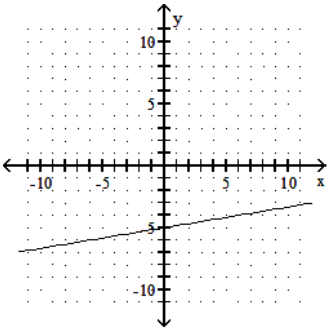
A)



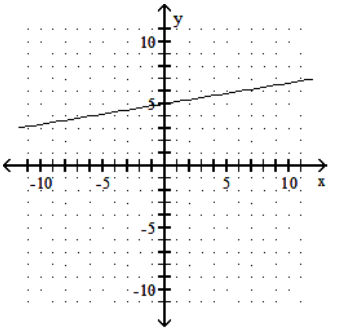
B)



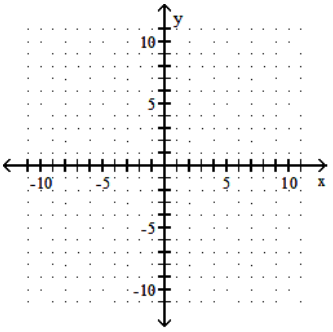
C)



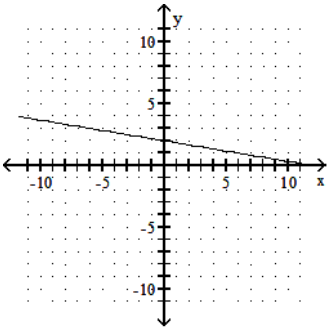
D)



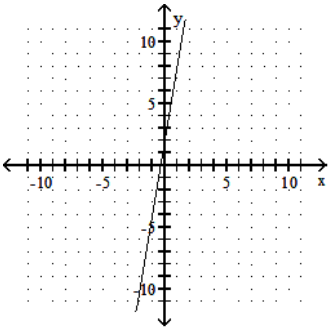
197) Through (-2, -10), m = 6 197) _____



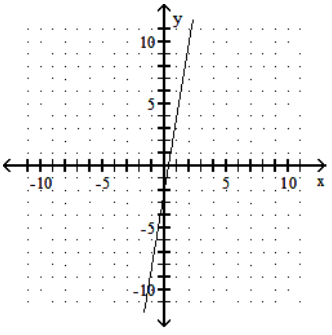
A)



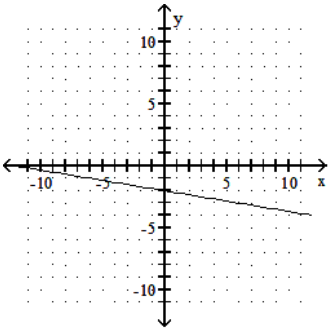
B)



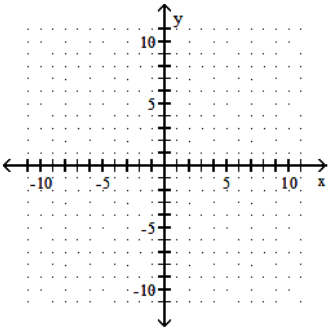
C)



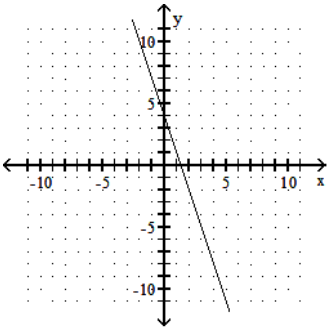
D)



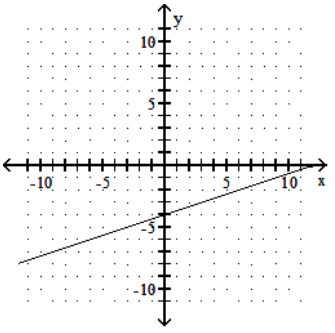
198) Through (0, 4), m = -3 198) _____



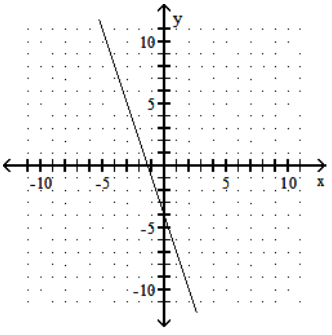
A)



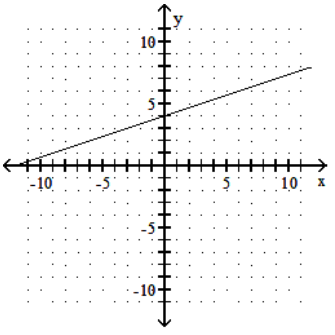
B)



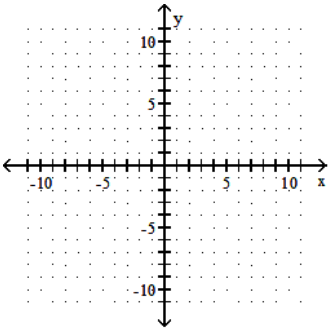
C)



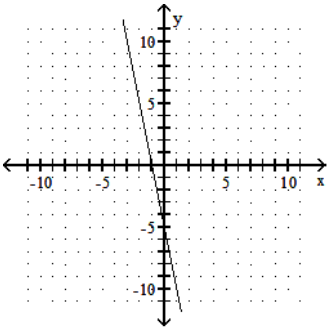
D)



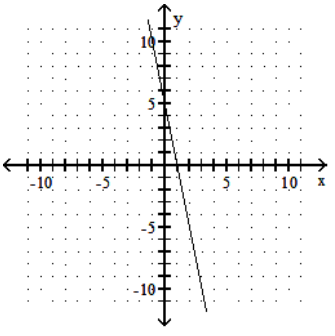
199) Through (0, 5), m = - $\frac{1}{5}$ 199) _____



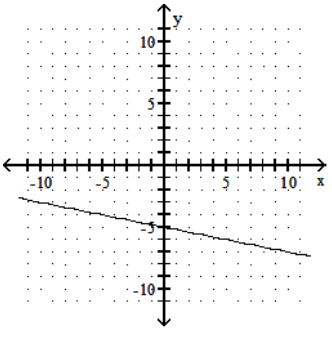
A)



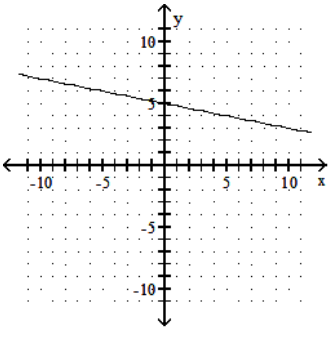
B)



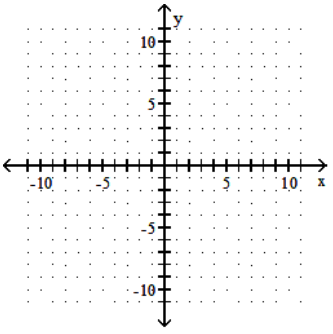
C)



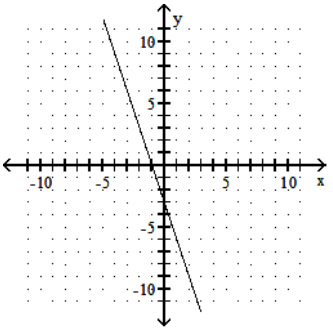
D)



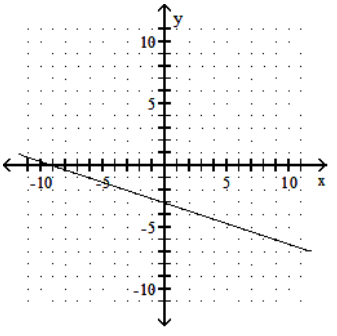
200) Through (9, 0), m = - $\frac{1}{3}$ 200) _____



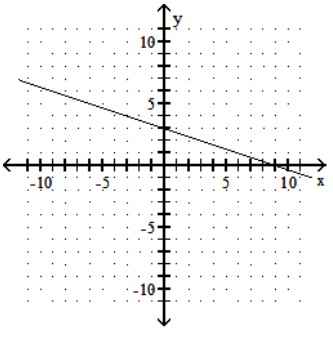
A)



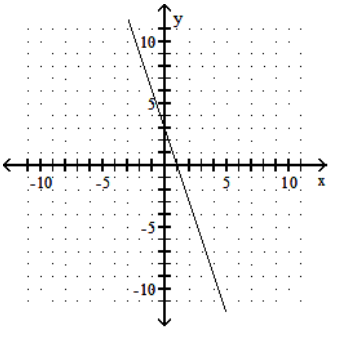
B)



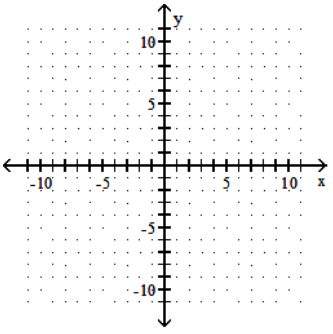
C)



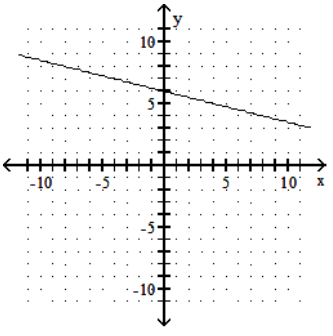
D)



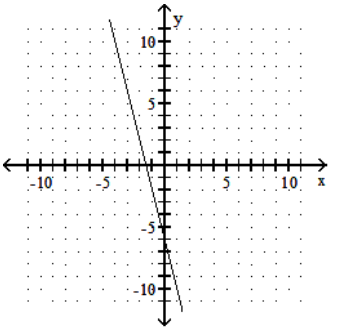
201) Through (0, 6), m = - $\frac{1}{4}$ 201) _____



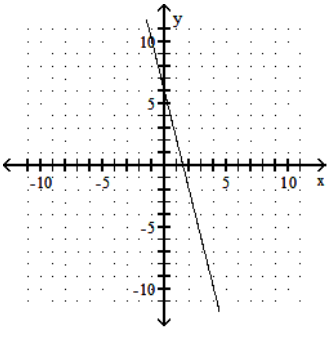
A)



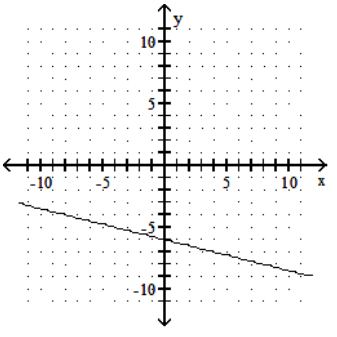
B)



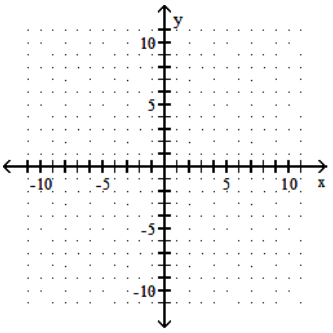
C)



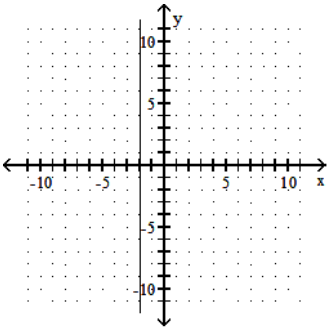
D)



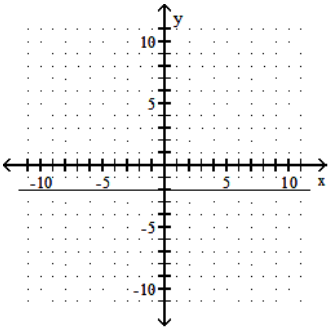
202) Through (-4, -2), m = 0 202) _____



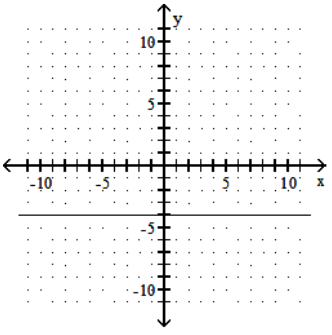
A)



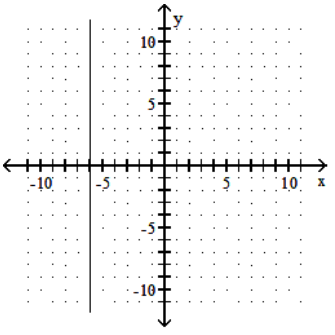
B)



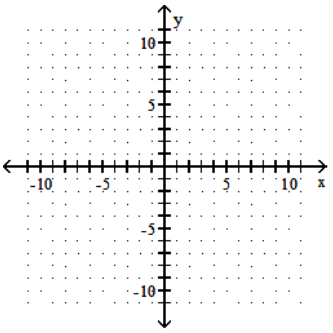
C)



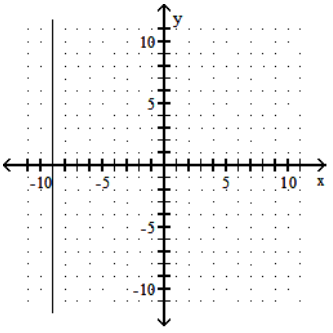
D)



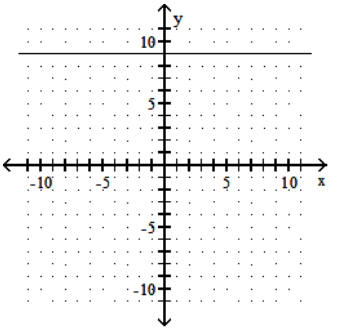
203) Through (-3, -9), undefined slope 203) _____



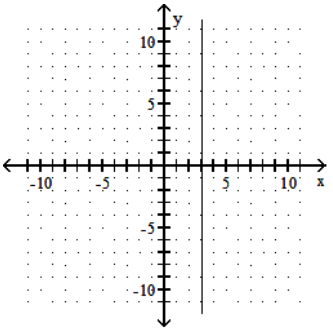
A)



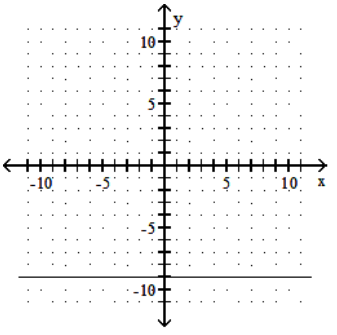
B)



C)



D)



Solve the problem.

204) Suppose the annual sales of a particular brand of appliance are given by the linear function $f(x) = 80x + 3400$, where f(x) represents the number of sales in year x, with x = 0 corresponding to 1982. Find the number of sales in 1999. 204) _____

A) 9520 B) 9440 C) 4760 D) 4680

205) Assume that the annual sales of a small manufacturer can be modeled by a linear function and that sales were $10,000 in 1982 and $48,500 in 1987. Let x = 0 represent 1982 and f(x) represent annual sales, and write a formula for f(x). 205) _____

A) $f(x) = 7700x + 48,500$ B) $f(x) = 7700x + 10,000$

C) $f(x) = 38,500x + 48,500$ D) $f(x) = 38,500x + 10,000$

206) A moving firm charges a flat fee of \$40 plus \$35 per hour. Let f(x) represent the cost, in dollars, of using the moving firm for x hours. Write a formula for f(x). 206) _____

A) f(x) = 35x + 40 B) f(x) = 40x - 35 C) f(x) = 35x - 40 D) f(x) = 40x + 35

207) An electrician charges a fee of \$40 plus \$25 per hour. Let f(x) be the cost, in dollars, of using the electrician for x hours. Find a formula for f(x). 207) _____

A) f(x) = 40x - 25 B) f(x) = 40x + 25 C) f(x) = 25x + 40 D) f(x) = 25x - 40

208) Ace Cable charges \$28 for the basic service plus \$6 for each movie channel. Let f(x) be the total cost, in dollars, of subscribing to Ace Cable and including x movie channels. Write a formula for f(x). 208) _____

A) f(x) = 6x + 28 B) f(x) = 28x - 6 C) f(x) = 28x + 6 D) f(x) = 6x - 28

Provide an appropriate response.

209) In the linear function, y = mx + b, b is the _?_ of the function. 209) _____

A) slope B) y-intercept C) domain D) x-intercept

210) In the linear function, y = mx + b, m is the _?_ of the function. 210) _____

A) range B) y-intercept C) slope D) x-intercept

211) In the linear function, y = -12 + 7x, -12 is the _?_ of the function. 211) _____

A) slope B) domain C) y-intercept D) x-intercept

212) If the y-intercept of the linear function y = 4x + b lies below the x-axis, then what can you say about b? 212) _____

A) b > 0 B) b < 0 C) b ≥ 0 D) b = 0

213) If m > 0, the graph of y = mx + b _?_. 213) _____

A) does not represent a function B) is a horizontal line

C) slopes downward to the right D) slopes upward to the right

214) For the equation y = mx + b, find a formula for the value of x given any value of y. 214) _____

A) $x = \frac{my - b}{b}$ B) x = y - mx - b C) $x = \frac{y + b}{m}$ D) $x = \frac{y - b}{m}$

Write the slope-intercept form of the line that passes through the given point with slope m.

215) Through (4, 5), $m = -\frac{5}{9}$ 215) _____

A) $y = \frac{5}{9}x + \frac{20}{9}$ B) $y = -\frac{5}{9}x + \frac{20}{9}$ C) $y = \frac{5}{9}x - \frac{65}{9}$ D) $y = -\frac{5}{9}x + \frac{65}{9}$

216) Through (3, 5), $m = -\frac{2}{3}$ 216) _____

A) $y = -\frac{2}{3}x + 7$ B) $y = -\frac{2}{3}x + 2$ C) $y = \frac{2}{3}x - 7$ D) $y = \frac{2}{3}x + 2$

217) Through (4, -4), m = 0 217) _____

A) y = -4 B) x = -4 C) x = 4 D) y = 4

218) Through (4, 0), m = -1 218) _____

A) y = x - 4 B) y = -x + 4 C) y = 4x D) y = -4x

219) Through (-3, -5), m = 3 219) _____

A) y = 3x + 4 B) y = -3x + 4 C) y = 3x - 14 D) y = -3x - 14

220) Through (2, -6), m = -1.5 220) _____

A) y = 1.5x - 9 B) y = -1.5x - 9 C) y = 1.5x - 3 D) y = -1.5x - 3

Find the slope-intercept form of the line satisfying the given conditions.

221) Through (-4, 8) and (0, -7) 221) _____

A) $y = \frac{15}{4}x - 7$ B) $y = -\frac{15}{4}x - 7$ C) $y = \frac{12}{7}x - 7$ D) $y = -\frac{12}{7}x - 7$

222) Through (4, 0) and (-5, 5) 222) _____

A) $y = \frac{5}{9}x + \frac{20}{9}$ B) $y = -\frac{2}{5}x + 3$ C) $y = -\frac{5}{9}x + \frac{20}{9}$ D) $y = \frac{2}{5}x + 3$

223) Through (-7, 2) and (2, -6) 223) _____

A) $y = -\frac{9}{8}x - \frac{15}{4}$ B) $y = \frac{8}{9}x - \frac{38}{9}$ C) $y = \frac{9}{8}x - \frac{15}{4}$ D) $y = -\frac{8}{9}x - \frac{38}{9}$

224) Through (-3, 4) and (-1, 9) 224) _____

A) $y = \frac{7}{10}x + \frac{97}{10}$ B) $y = -\frac{5}{2}x + \frac{23}{2}$ C) $y = -\frac{7}{10}x + \frac{97}{10}$ D) $y = \frac{5}{2}x + \frac{23}{2}$

225) Through (0, -1) and (7, 0) 225) _____

A) $y = \frac{1}{7}x - 1$ B) $y = -\frac{1}{7}x - 1$ C) y = 7x + 7 D) y = - 7x + 7

226) Through (-2, 1.5) and (0, 6.5) 226) _____

A) y = -2.5x + 6.5 B) y = 0.4x + 6.5 C) y = -0.4x + 6.5 D) y = 2.5x + 6.5

227) 227) _____

x	-4	-2	0	2	4
y	-12	-2	8	18	28

A) y = -5x + 8 B) y = -10x + 28 C) y = 5x + 8 D) y = 10x + 28

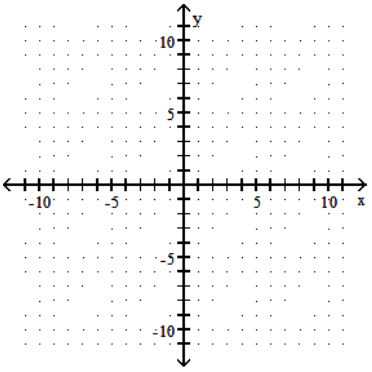
228) 228) _____

x	-4	-2	0	2	4
y	28	18	8	-2	-12

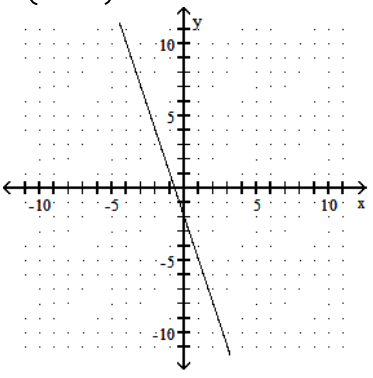
A) y = -5x + 8 B) y = 5x + 8 C) y = -10x - 12 D) y = 10x - 12

Graph the line, finding intercepts to determine two points on the line.

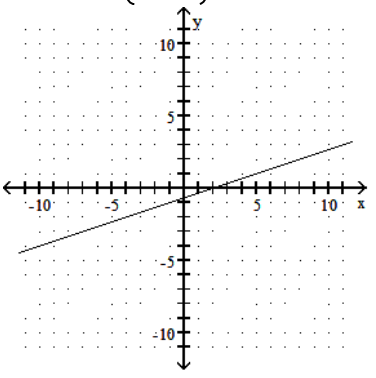
229) $9y - 3x = -6$ 229) _____



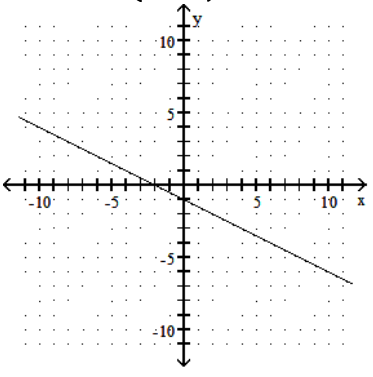
A) x: $\left(-\frac{2}{3}, 0\right)$; y: (0, -2)



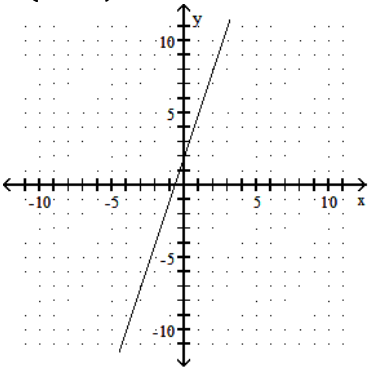
B) x: (2, 0); y: $\left(0, -\frac{2}{3}\right)$



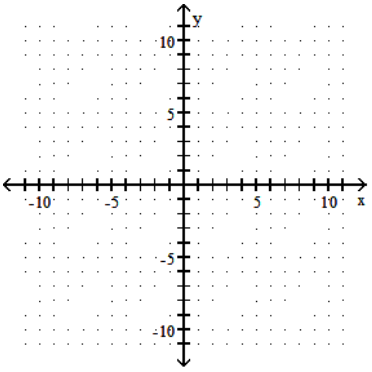
C) x: (-2, 0); y: $\left(0, -\frac{2}{3}\right)$



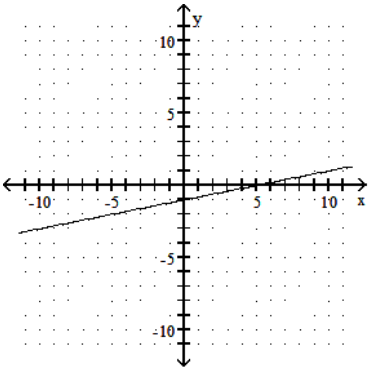
D) x: $\left(-\frac{2}{3}, 0\right)$; y: (0, 2)



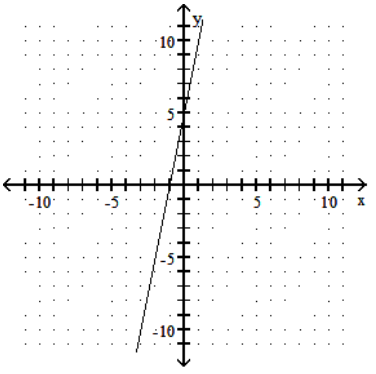
230) $3x - 15y = 15$ 230) _____



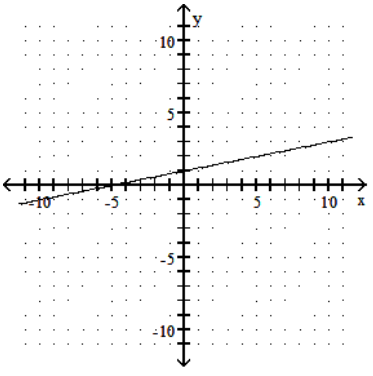
A) x: (5, 0); y: (0, -1)



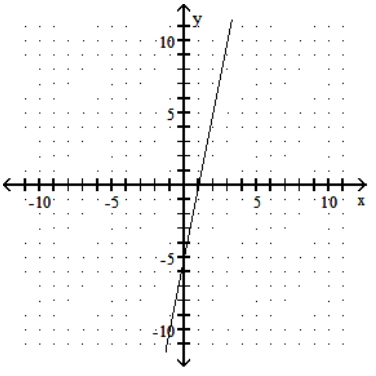
B) x: (-1, 0); y: (0, 5)



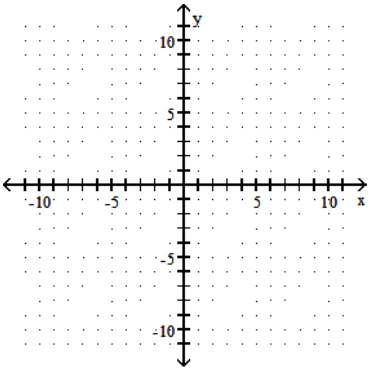
C) x: (-5, 0); y: (0, 1)



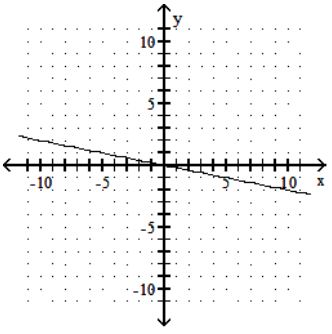
D) x: (1, 0); y: (0, -5)



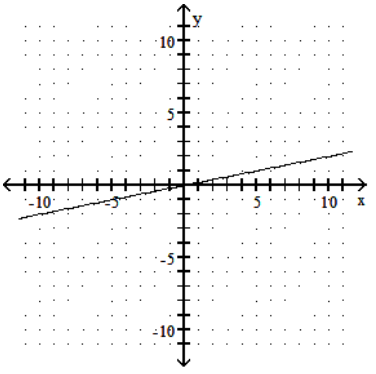
231) $4x - 20y = 0$ 231) _____



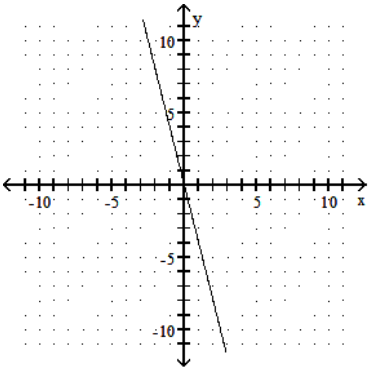
A) x: (0, 0); y: (0, 0)



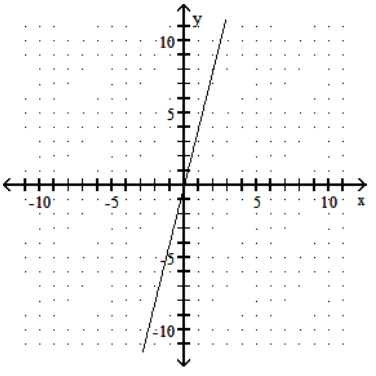
B) x: (0, 0); y: (0, 0)



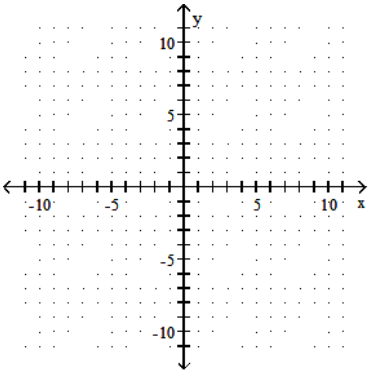
C) x: (0, 0); y: (0, 0)



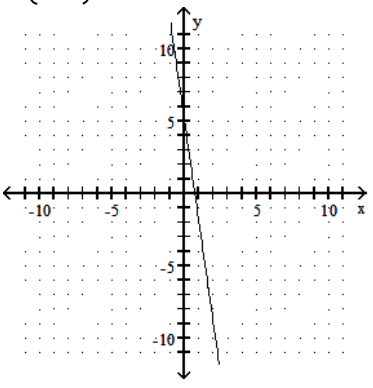
D) x: (0, 0); y: (0, 0)



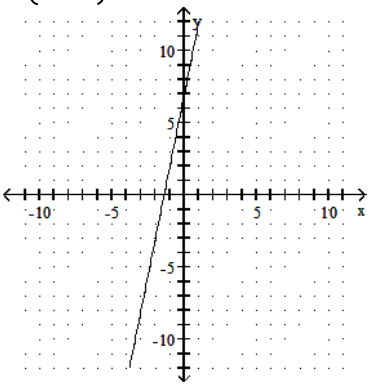
232) $7x - y = -5$ 232) _____



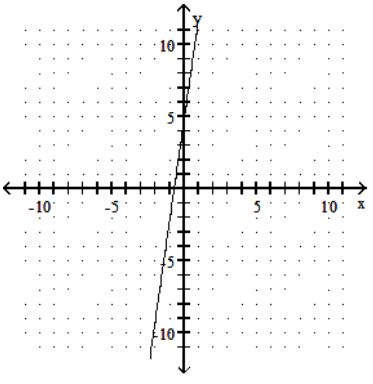
A) x: $\left(\frac{5}{7}, 0\right)$; y: (0, 5)



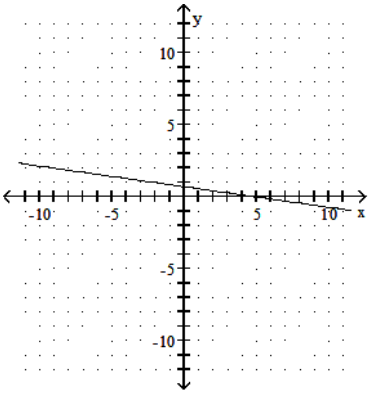
B) x: $\left(-\frac{7}{5}, 0\right)$; y: (0, 7)



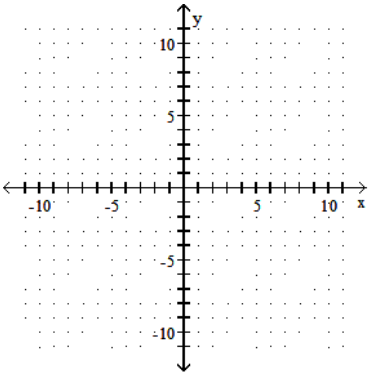
C) x: $\left(-\frac{5}{7}, 0\right)$; y: (0, 5)



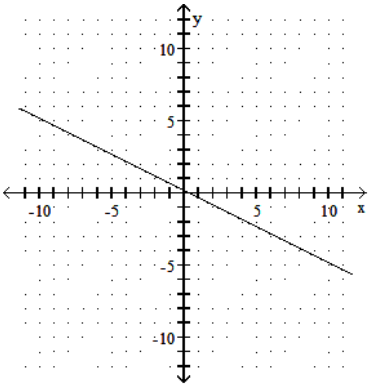
D) x: (5, 0); y: $\left(0, \frac{5}{7}\right)$



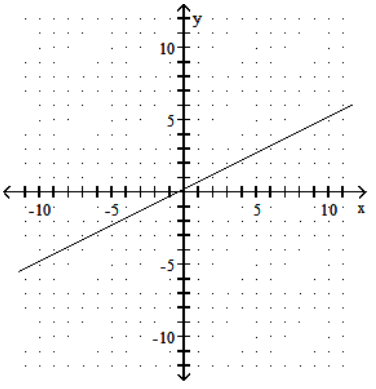
233) $2x - 4y = 0.8$ 233) _____



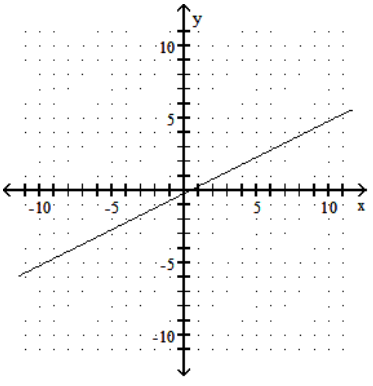
A) (0.2, 0), (0, 0.4)



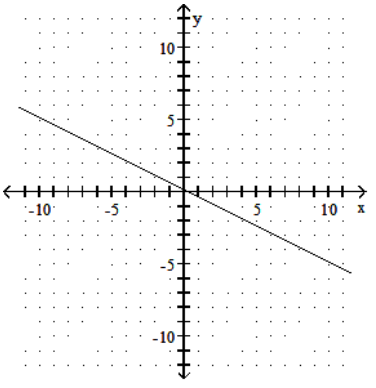
B) x: (-0.2, 0); y: (0, 0.4)



C) x: (0.4, 0); y: (0, -0.2)



D) x: (4, 0); y: (0, 0.2)



Write the equation in the form $y = mx + b$.

234) $20x + 7y = 19$ 234) _____

A) $y = \frac{20}{7}x - \frac{19}{7}$ B) $y = 20x - 19$ C) $y = \frac{20}{7}x + \frac{19}{7}$ D) $y = -\frac{20}{7}x + \frac{19}{7}$

235) $-4x + 3y = 1$ 235) _____

A) $y = \frac{4}{3}x - \frac{1}{3}$ B) $y = \frac{4}{3}x + \frac{1}{3}$ C) $y = -\frac{4}{3}x + \frac{1}{3}$ D) $y = \frac{3}{4}x + \frac{1}{3}$

236) $0.5x - 0.6y = 0.7$ 236) _____

A) $y = 5x - 7$ B) $y = \frac{6}{5}x + \frac{7}{5}$ C) $y = \frac{5}{6}x + \frac{7}{6}$ D) $y = \frac{5}{6}x - \frac{7}{6}$

237) $5y - 9x = 8$ 237) _____

A) $y = \frac{9}{5}x - \frac{8}{5}$ B) $y = \frac{5}{9}x + \frac{8}{5}$ C) $y = -\frac{9}{5}x + \frac{8}{5}$ D) $y = \frac{9}{5}x + \frac{8}{5}$

Find the equation of the line satisfying the given conditions, giving it in slope-intercept form if possible.

238) Through $(-9, 7)$, perpendicular to $5x - 6y = -87$ 238) _____

A) $y = -\frac{6}{5}x$ B) $y = -\frac{6}{5}x - \frac{19}{5}$ C) $y = \frac{6}{5}x + \frac{19}{5}$ D) $y = -\frac{5}{6}x + 19$

239) Through $(4, 1)$, parallel to $9x + 8y = 76$ 239) _____

A) $y = -\frac{1}{2}x + \frac{19}{2}$ B) $y = \frac{9}{8}x - \frac{11}{2}$ C) $y = -\frac{8}{9}x + \frac{1}{9}$ D) $y = -\frac{9}{8}x + \frac{11}{2}$

240) Through $(-9, -6)$, parallel to $-5x + 8y = 13$ 240) _____

A) $y = \frac{8}{5}x + \frac{6}{5}$ B) $y = -\frac{5}{8}x + \frac{3}{8}$ C) $y = \frac{9}{8}x + \frac{13}{8}$ D) $y = \frac{5}{8}x - \frac{3}{8}$

241) Through $(-5, 2)$, perpendicular to $6x - 7y = -16$ 241) _____

A) $y = \frac{5}{7}x - \frac{16}{7}$ B) $y = -\frac{7}{6}x - \frac{23}{6}$ C) $y = \frac{7}{6}x - \frac{23}{6}$ D) $y = -\frac{6}{7}x - \frac{6}{7}$

242) Through $(8, -1)$, perpendicular to $-9x + 4y = -76$ 242) _____

A) $y = -\frac{4}{9}x$ B) $y = -\frac{4}{9}x + \frac{23}{9}$ C) $y = \frac{4}{9}x - \frac{23}{9}$ D) $y = -\frac{9}{4}x + 23$

243) Through $(2, -5)$, perpendicular to $x = -7$ 243) _____

A) $y = 5$ B) $x = -7$ C) $y = -7$ D) $y = -5$

Solve the problem.

244) If an object is dropped from a tower of unknown height, the velocity of the object after t seconds can be obtained by multiplying t by 32 and adding 10 to the result. Therefore, you can express V as a linear function of t. Find the domain of this function. 244) _____

A) $[1, 4]$ B) $(-1, \infty)$ C) $[0, \infty)$ D) $(-\infty, \infty)$

245) In a certain city, the cost of a taxi ride is computed as follows: There is a fixed charge of \$2.95 as soon as you get in the taxi, to which a charge of \$2.10 per mile is added. Find an equation that can be used to determine the cost, C(x), of an x-mile taxi ride. 245) _____

A) $C(x) = 2.10 + 2.95x$ B) $C(x) = 3.55x$

C) $C(x) = 2.95 + 2.10x$ D) $C(x) = 5.05x$

246) Marty's Tee Shirt & Jacket Company is to produce a new line of jackets with an embroidery of a Great Pyrenees dog on the front. There are fixed costs of $640 to set up for production, and variable costs of $34 per jacket. Write an equation that can be used to determine the total cost, C(x), encountered by Marty's Company in producing x jackets. 246) _____

A) C(x) = 640x + 34
B) C(x) = (640 + 34) x
C) C(x) = 640 + 34x
D) C(x) = 640 - 34x

247) Marty's Tee Shirt & Jacket Company is to produce a new line of jackets with a embroidery of a Great Pyrenees dog on the front. There are fixed costs of $680 to set up for production, and variable costs of $34 per jacket. Write an equation that can be used to determine the total cost, C(x), encountered by Marty's Company in producing x jackets, and use the equation to find the total cost of producing 113 jackets. 247) _____

A) $4502
B) $4522
C) $4514
D) $4534

248) Ten students in a graduate program were randomly selected. Their grade point averages (GPAs) when they entered the program were between 3.5 and 4.0. The following data were obtained regarding their GPAs on entering the program versus their current GPAs. Find the equation of the least-squares regression line that models the data. 248) _____

Entering GPA	Current GPA
3.5	3.6
3.8	3.7
3.6	3.9
3.6	3.6
3.5	3.9
3.9	3.8
4.0	3.7
3.9	3.9
3.5	3.8
3.7	4.0

A) $y \approx 5.81 + 0.497x$
B) $y \approx 3.67 + 0.0313x$
C) $y \approx 4.91 + 0.0212x$
D) $y \approx 2.51 + 0.329x$

249) The paired data below consist of the test scores of 6 randomly selected students and the number of hours they studied for the test. Find the equation of the least-squares regression line that models the data. 249) _____

Hours	5	10	4	6	10	9
Score	64	86	69	86	59	87

A) $y \approx -67.3 + 1.07x$
B) $y \approx 33.7 - 2.14x$
C) $y \approx 67.3 + 1.07x$
D) $y \approx 33.7 + 2.14x$

250) The paired data below consist of the costs of advertising (in thousands of dollars) and the number of products sold (in thousands). Find the equation of the least-squares regression line that models the data 250) _____

Cost	9	2	3	4	2	5	9	10
Number	85	52	55	68	67	86	83	73

A) $y \approx -26.4 - 1.42x$
B) $y \approx 55.8 + 2.79x$
C) $y \approx 26.4 + 1.42x$
D) $y \approx 55.8 - 2.79x$

251) The paired data below consist of the temperatures on randomly chosen days and the amount a certain kind of plant grew (in millimeters). Find the equation of the least-squares regression line that models the data. 251) _____

Temp	62	76	50	51	71	46	51	44	79
Growth	36	39	50	13	33	33	17	6	16

A) $y \approx 7.30 - 0.112x$
B) $y \approx -14.6 - 0.211x$
C) $y \approx 14.6 + 0.211x$
D) $y \approx 7.30 + 0.122x$

252) A study was conducted to compare the average time spent in the lab each week versus course grade for computer students. The results are recorded in the table below. Find the equation of the least-squares regression line that models the data. 252) _____

Number of hours spent in lab	Grade (percent)
10	96
11	51
16	62
9	58
7	89
15	81
16	46
10	51

A) $y \approx 0.930 + 44.3x$
B) $y \approx 88.6 - 1.86x$
C) $y \approx 1.86 + 88.6x$
D) $y \approx 44.3 + 0.930x$

253) Two separate tests are designed to measure a student's ability to solve problems. Several students are randomly selected to take both tests and the results are shown below. Find the equation of the least-squares regression line that models the data. 253) _____

Test A	48	52	58	44	43	43	40	51	59
Test B	73	67	73	59	58	56	58	64	74

A) $y \approx 19.4 + 0.930x$
B) $y \approx -19.4 - 0.930x$
C) $y \approx -0.930 + 19.4x$
D) $y \approx 0.930 - 19.4x$

Provide an appropriate response.

254) A line passes through the points (10, 2) and (10, 3). The equation of this line is ?. The slope of the line is ?. 254) _____

A) y = 10; undefined B) x = 10; undefined
C) x = 10; 0 D) y = 10; 0

255) A line passes through the points (9, 2) and (4, 2). The equation of this line is ?. The slope of the line is ?. 255) _____

A) x = 2; undefined B) x = 2; 0
C) y = 2; undefined D) y = 2; 0

256) What is the general equation of all lines of slope 1? 256) _____

A) y = 1 B) y = mx + b C) y = x + b D) x = 1

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

257) Explain why the rule that the product of the slopes of perpendicular lines equals -1 does not apply when one of the lines is horizontal. 257) _____

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

258) Write the general equation of any line that passes through the origin. 258) _____

A) x = 0 B) y = mx + b C) y = mx D) y = 0

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

259) Show that the points $P_1(2, 4)$, $P_2(5, 2)$, and $P_3(7, 5)$ are the vertices of a right triangle. 259) _____

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

Find the zero of the function f.

260) $f(x) = \frac{1}{2}x + \frac{1}{4}$ 260) _____

A) $\frac{1}{4}$ B) $\frac{1}{2}$ C) $-\frac{1}{4}$ D) $-\frac{1}{2}$

261) f(x) = 2x + 4 261) _____

A) -4 B) 2 C) 4 D) -2

262) $f(x) = \frac{1}{5}x$ 262) _____

A) 5 B) -5 C) 0 D) Does not exist

263) f(x) = 9x 263) _____

A) 9 B) 0 C) -9 D) Does not exist

264) f(x) = 3x - 4 264) _____

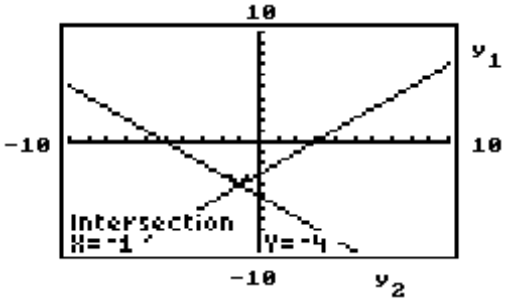
A) $\frac{4}{3}$ B) -1 C) 1 D) $-\frac{4}{3}$

265) $f(x) = -3(5x - 9) + 5(-8x - 3)$ 265) _____

A) $\frac{12}{55}$ B) $-\frac{55}{12}$ C) $\frac{55}{42}$ D) $-\frac{12}{55}$

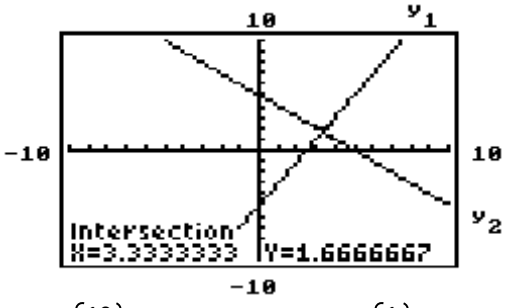
Two linear functions, y_1 and y_2, are graphed with their point of intersection indicated. Give the solution set of $y_1 = y_2$.

266) 266) _____



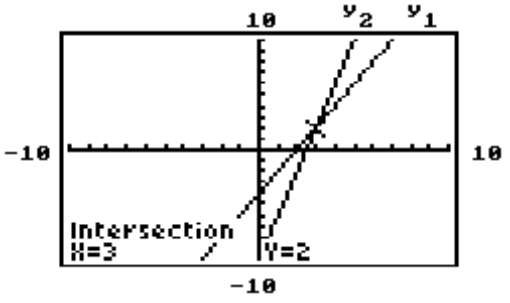
A) {-2} B) {3} C) {-4} D) {-1}

267) 267) _____



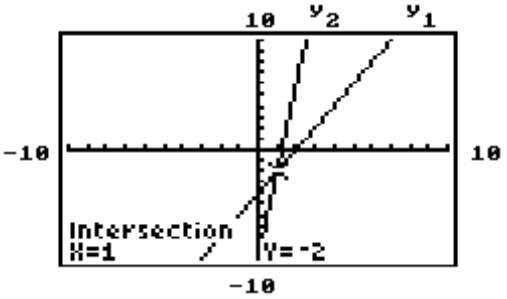
A) $\left\{\frac{10}{3}\right\}$ B) $\left\{\frac{1}{6}\right\}$ C) $\left\{\frac{1}{3}\right\}$ D) $\left\{\frac{5}{3}\right\}$

268) 268) _____



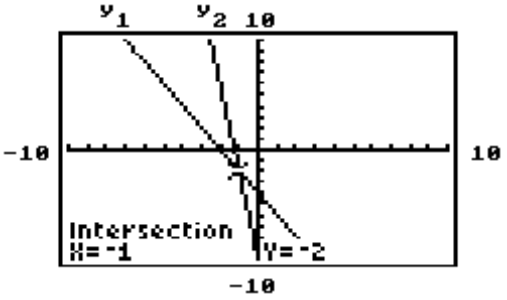
A) {-3} B) {2} C) $\left\{\frac{5}{2}\right\}$ D) {3}

269) 269) _____



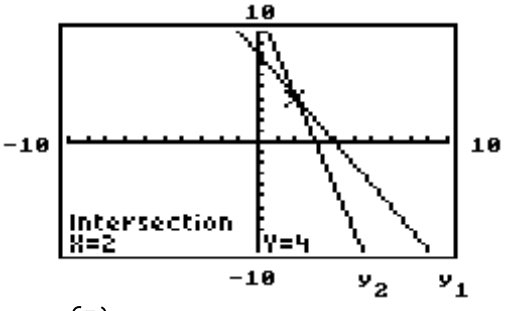
A) {1} B) {4} C) {-2} D) {2}

270) 270) _____



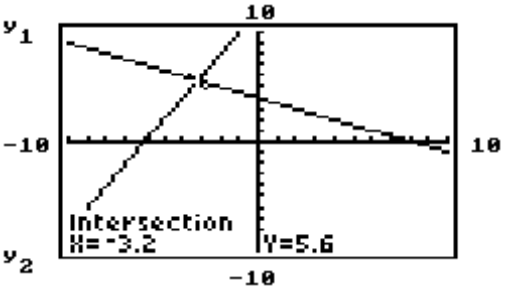
A) {-1} B) {1} C) $\left\{-\frac{5}{2}\right\}$ D) {-2}

271) 271) _____



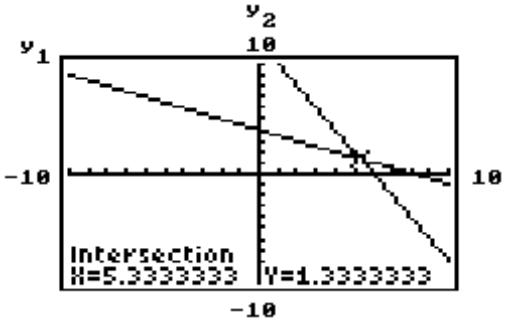
A) $\left\{\frac{7}{2}\right\}$ B) {8} C) {2} D) {4}

272) 272) _____



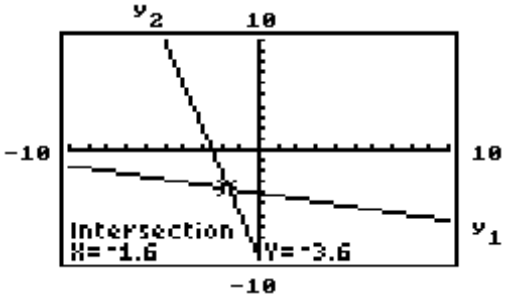
A) {8} B) {-3.2} C) {5.6} D) {6}

273) 273) _____



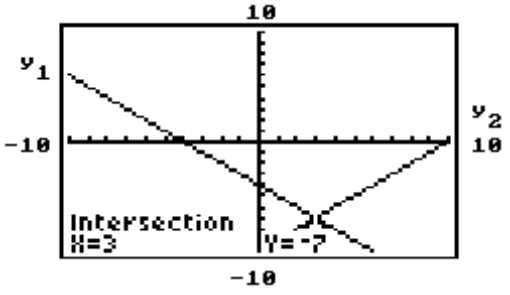
A) {6} B) $\left\{\frac{16}{3}\right\}$ C) $\left\{\frac{4}{3}\right\}$ D) {8}

274) 274) _____



A) {-3.6} B) {-16} C) {-1.6} D) $\left\{-\frac{5}{2}\right\}$

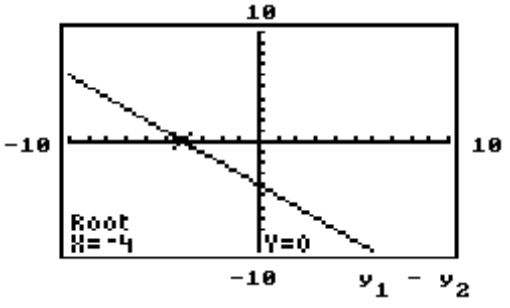
275) 275) _____



A) {10} B) {-7} C) {-4} D) {3}

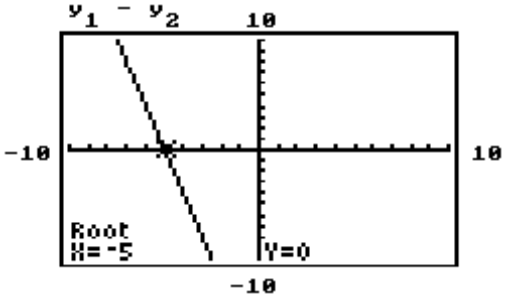
Use the graph of $y = y_1 - y_2$ to solve the equation $y_1 = y_2$, where y_1 and y_2 represent linear functions.

276) 276) _____



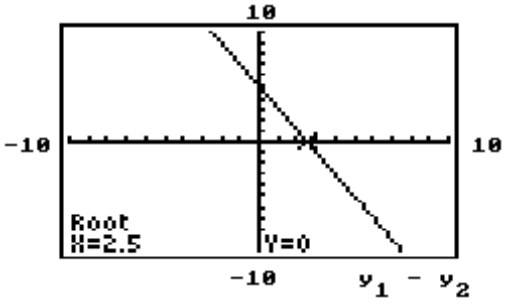
A) {0} B) {-3} C) {-5} D) {-4}

277) 277) _____



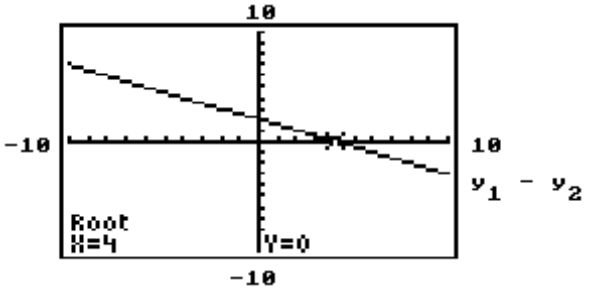
A) {-6} B) {-4} C) {-5} D) {0}

278) 278) _____



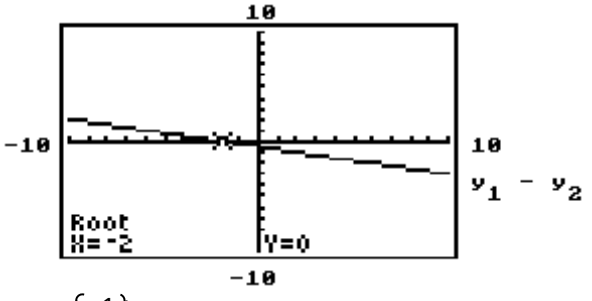
A) {0} B) {3} C) {2.5} D) {5}

279) 279) _____



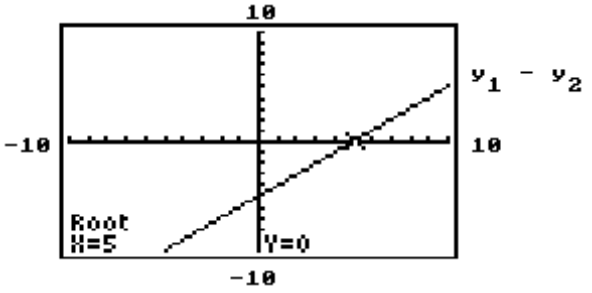
A) {4} B) {5} C) {0} D) {2}

280) 280) _____



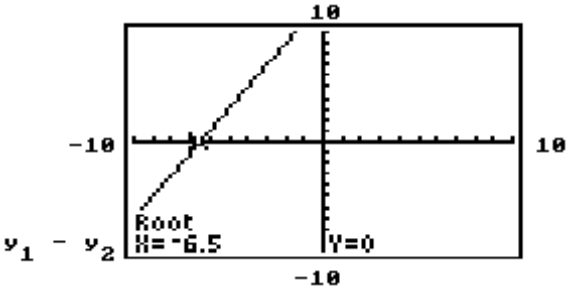
A) $\left\{-\frac{1}{2}\right\}$ B) {-2} C) {0} D) {-1}

281) 281) _____



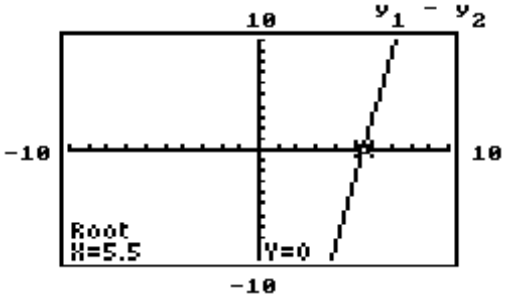
A) {4} B) {5} C) {-5} D) {0}

282) 282) _____



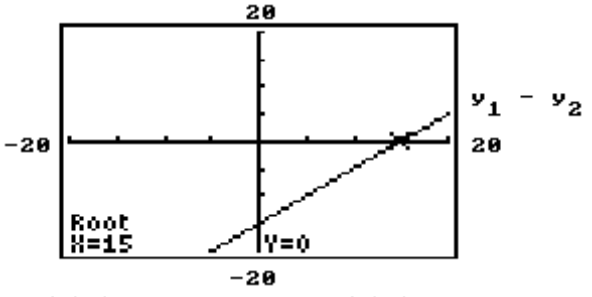
A) {-6.5} B) {0} C) {-7} D) {13}

283) 283) _____



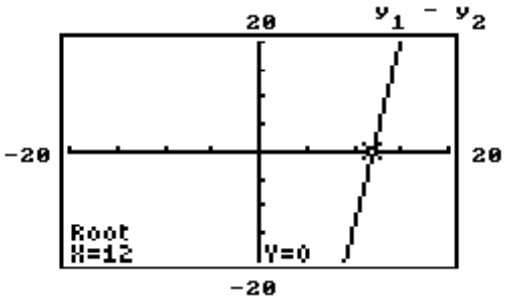
A) {5.5} B) {6} C) {5} D) {0}

284) 284) _____



A) {15} B) {16} C) {0} D) {-15}

285) 285) _____



A) {-11} B) {0} C) {12} D) {-12}

Solve the equation analytically.

286) $4x + 19 = 3x + 2$ 286) _____

A) {-17} B) {-21} C) {17} D) {21}

287) $33x - 1 = 12x + 11$ 287) _____

A) $\left\{\frac{4}{7}\right\}$ B) $\left\{\frac{9}{2}\right\}$

C) $\left\{\frac{15}{2}\right\}$ D) $\left\{-\frac{4}{7}\right\}$

288) $43(x - 172) = 86$ 288) _____

A) {86} B) {172} C) {170} D) {174}

289) $6x - (2x - 1) = 2$ 289) _____

A) $\left\{\frac{1}{4}\right\}$ B) $\left\{-\frac{1}{4}\right\}$ C) $\left\{\frac{1}{8}\right\}$ D) $\left\{-\frac{1}{8}\right\}$

290) $(x - 11) - (x + 8) = 8x$ 290) _____

A) $\left\{-\frac{3}{8}\right\}$ B) $\left\{-\frac{1}{2}\right\}$ C) $\left\{-\frac{19}{6}\right\}$ D) $\left\{-\frac{19}{8}\right\}$

291) $6(3x - 1) = 24$ 291) _____

A) $\left\{\frac{5}{3}\right\}$ B) $\left\{\frac{25}{18}\right\}$ C) $\left\{\frac{23}{18}\right\}$ D) $\{1\}$

292) $8x - (1 - x) = 7[8 - (9 + 2x - 1)]$ 292) _____

A) $\left\{-\frac{13}{21}\right\}$ B) $\left\{-\frac{1}{5}\right\}$ C) $\left\{\frac{1}{23}\right\}$ D) $\left\{-\frac{13}{23}\right\}$

293) $-[x - (5x + 5)] = 9 - (-9x + 3)$ 293) _____

A) $\left\{-\frac{11}{15}\right\}$ B) $\left\{-\frac{17}{4}\right\}$

C) $\left\{-\frac{1}{5}\right\}$ D) $\left\{-\frac{7}{5}\right\}$

294) $-5.8x = -20.5 - 1.7x$ 294) _____

A) {5} B) {3.8} C) {3.5} D) {-25}

295) $-7.9x + 1.6 = -75.2 - 1.5x$ 295) _____

A) {-83} B) {12} C) {9.7} D) {9.9}

296) $\frac{2}{5}x - \frac{1}{3}x = 4$ 296) _____

A) {-120} B) {-60} C) {60} D) {120}

297) $\frac{1}{4}x - \frac{3}{8}x = 2$ 297) _____

A) {-16} B) {14} C) {16} D) {-14}

298) $\frac{x + 5}{6} = \frac{x + 6}{7}$ 298) _____

A) $\left\{\frac{11}{13}\right\}$ B) $\left\{\frac{11}{42}\right\}$ C) $\left\{\frac{1}{42}\right\}$ D) {1}

299) $\frac{1}{4}(16x - 20) = \frac{1}{5}(25x - 20)$ 299) _____

A) {- 20} B) {- 1} C) $\left\{\frac{1}{20}\right\}$ D) {1}

300) $\frac{x - 6}{4} = \frac{x + 2}{6}$ 300) _____

A) {- 22} B) $\left\{\frac{3}{2}\right\}$ C) $\left\{\frac{11}{6}\right\}$ D) {22}

301) $\frac{2x - 1}{3} + \frac{9x - 5}{3} = -\frac{8}{5}$ 301) _____

A) $\left\{\frac{82}{165}\right\}$ B) $\left\{-\frac{54}{55}\right\}$ C) $\left\{-\frac{4}{5}\right\}$ D) $\left\{\frac{6}{55}\right\}$

Use the intersection-of-graphs method to approximate the solution to the nearest hundredth.

302) $2(0.47x + \sqrt{5}) = \sqrt[3]{12}x - 9$ 302) _____

A) {-9.98} B) {219.64} C) {9.98} D) ∅

303) $6\pi x - \sqrt[3]{2} = 0.10\pi x + \sqrt{35}$ 303) _____

A) {8.52} B) {-0.39} C) {0.39} D) ∅

304) $10(0.32x + \sqrt{13}) = \sqrt[3]{20}x + 4$ 304) _____

A) {-1452.32} B) {66.01} C) {-66.01} D) ∅

305) $4\pi x - \sqrt[3]{2} = 0.10\pi x + \sqrt{13}$ 305) _____

A) {0.40} B) {-0.40} C) {8.74} D) ∅

306) $-0.02(\sqrt{10} + 10x) + 0.55(\pi x - 3.1) = -18$ 306) _____

A) {-5.31} B) {10.62} C) {-10.62} D) ∅

307) $0.47(\sqrt{5} + 6x) - 0.94(\pi x + 4.3) = 9$ 307) _____

A) {90.15} B) {45.08} C) {-45.08} D) {-90.15}

308) $-6.5(17 + \sqrt{10}x) + 8.0(6\pi x - 7.5) = 17$ 308) _____

A) {1.44} B) {-0.69} C) {-1.44} D) {0.69}

309) $-1.1(5 + \sqrt{12}x) - 5.1(9\pi x - 1.8) = -8$ 309) _____

A) {0.08} B) {12.67} C) {-0.08} D) {-12.67}

310) $-1.14(4 + \sqrt[3]{5.27}x) - 10(\pi^2 x + \sqrt[3]{2.53}) = -3x - 10$ 310) _____

A) {-1.05} B) {0.08} C) {-0.08} D) {1.05}

311) $-8.74(4 + \sqrt[3]{7.79}x) - 8(\pi^2 x + \sqrt[3]{2.66}) = 5x - 4$ 311) _____

A) {1.37} B) {0.42} C) {-0.42} D) {-1.37}

Classify the equation as a contradiction, an identity, or a conditional equation.

312) $2(3x + 14) = 6x + 28$ 312) _____

A) Identity B) Conditional C) Contradiction

313) $5(4x - 26) - 20x + 130 = 0$ 313) _____

A) Conditional B) Identity C) Contradiction

314) $10x + 43 = 2(5x + 18)$ 314) _____

A) Identity B) Contradiction C) Conditional

315) $-10x - 112 + 5(2x + 23) = 0$ 315) _____

A) Conditional B) Contradiction C) Identity

316) $2(x + 6) - 9(x + 6) = -7x - 42$ 316) _____

A) Identity B) Conditional C) Contradiction

317) $2x - (7 - x) = 5[8 - (3 + 3x - 6)]$ 317) _____

A) Identity B) Conditional C) Contradiction

318) $8(x + 9) - 2(x + 9) = 6x + 90$ 318) _____

A) Conditional B) Identity C) Contradiction

319) $-[x - (-6x + 5)] = 4 - (-4x + 2)$ 319) _____

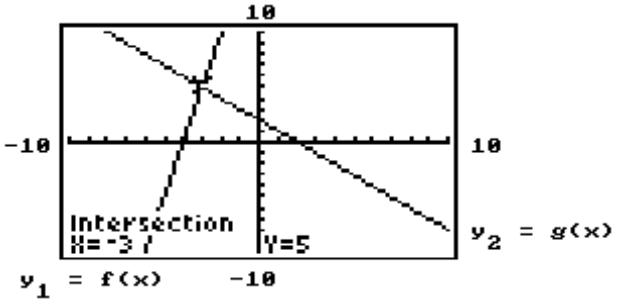
A) Contradiction B) Identity C) Conditional

320) $8[4 - (4 + 4x)] - 2x = -18 + 2(4 - 17x)$ 320) _____

A) Identity B) Conditional C) Contradiction

Refer to the graph of the linear function defined by y = f(x) or the graph of the linear functions defined by y_1 = f(x) and y_2 = g(x) to solve the equation or inequality.

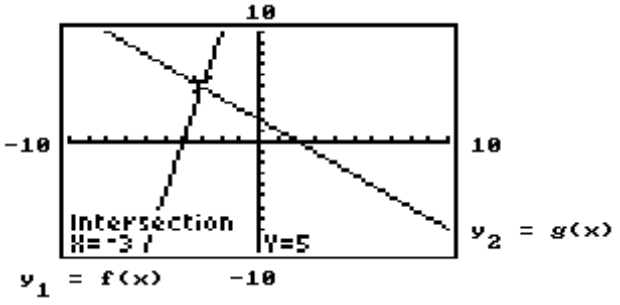
321) 321) _____



g(x) - f(x) = 0

A) {2} B) {-3} C) {-4} D) {5}

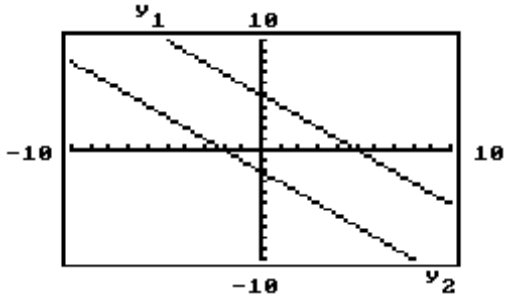
322) 322) _____



$y_1 > y_2$

A) [-3, ∞) B) (∞ , -3) C) (-3, ∞) D) (∞ , -3]

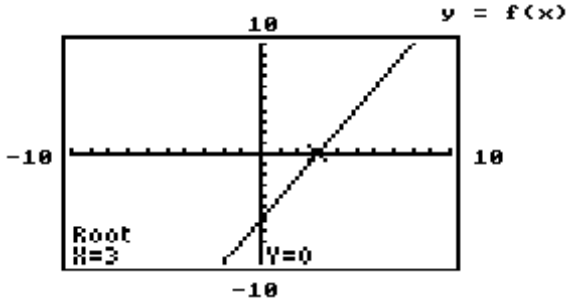
323) 323) _____



$y_1 \geq y_2$

A) (5, ∞) B) (-2, ∞) C) ∅ D) (-∞, ∞)

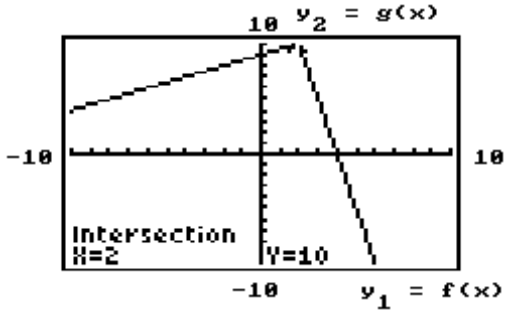
324) 324) _____



$f(x) \le 0$

A) $(-\infty, -6]$ B) $[-6, \infty)$ C) $(-\infty, 3]$ D) $[3, \infty)$

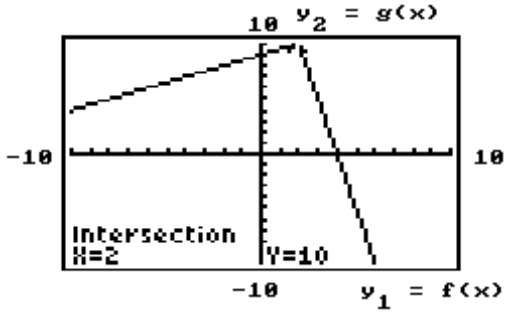
325) 325) _____



$g(x) > f(x)$

A) $(2, \infty)$ B) $(10, \infty)$ C) $(\infty, 10)$ D) $(\infty, 2)$

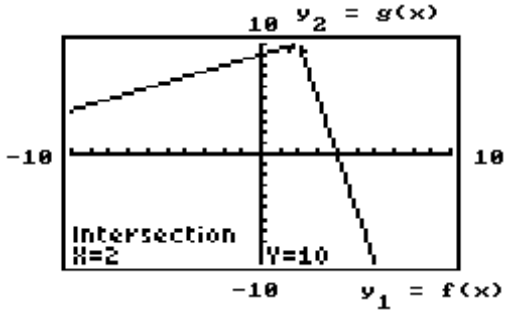
326) 326) _____



$y_1 - y_2 = 0$

A) {4} B) {9} C) {5} D) {2}

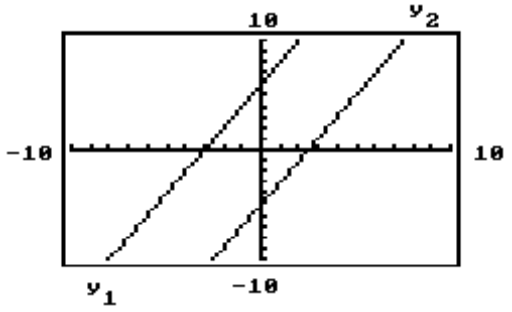
327) 327) _____



$y_1 - y_2 \le 0$

A) $(\infty, 2]$ B) $[10, \infty)$ C) $(\infty, 10]$ D) $[2, \infty)$

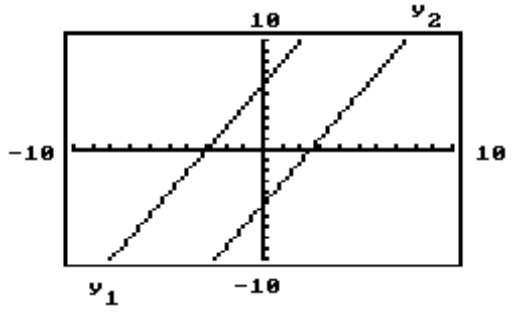
328) 328) _____



$y_1 > y_2$

A) $(-\infty, \infty)$ B) $(-5, \infty)$ C) $\varnothing$ D) $(6, \infty)$

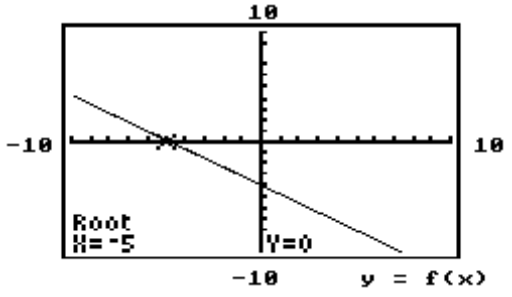
329) 329) _____



$y_1 < y_2$

A) $(-\infty, -3)$ B) $(3, \infty)$ C) $\varnothing$ D) $(-\infty, \infty)$

330) 330) _____



$f(x) > 0$

A) $(\infty, -4)$ B) $(-4, \infty)$ C) $(\infty, -5)$ D) $(-5, \infty)$

Solve the inequality analytically, writing the solution set in interval notation.

331) $x + 3 < -1$ 331) _____

A) $[-4, \infty)$ B) $(-\infty, -4]$ C) $(-\infty, -4)$ D) $(-4, \infty)$

332) $10x + 12 > 9x + 6$ 332) _____

A) $(18, \infty)$ B) $(-6, \infty)$ C) $(-\infty, -6)$ D) $(-\infty, 18)$

333) $-9x - 6 \le -10x - 7$ 333) _____

A) $[-1, \infty)$ B) $(-\infty, -9)$ C) $(-\infty, -1]$ D) $(-9, \infty)$

334) $11x + 7 \geq 10x - 3$ 334) _____

A) $(-\infty, -10]$ B) $(-\infty, 11)$ C) $(11, \infty)$ D) $[-10, \infty)$

335) $11x + 7 \geq 12x + 8$ 335) _____

A) $(-\infty, -1]$ B) $[1, \infty)$ C) $(-\infty, 11]$ D) $(11, \infty)$

336) $2 + 4x - 8 \geq 3x - 12$ 336) _____

A) $(4, \infty)$ B) $(-\infty, -6]$ C) $(-\infty, 4)$ D) $[-6, \infty)$

337) $18a - 36 > 6(2a - 8)$ 337) _____

A) $(-\infty, 18)$ B) $(-\infty, -2)$ C) $(-2, \infty)$ D) $(18, \infty)$

338) $-5(2x - 10) < -15x + 10$ 338) _____

A) $(-\infty, -15)$ B) $(-8, \infty)$ C) $(-\infty, -8)$ D) $(-15, \infty)$

339) $\frac{6x + 7}{6} < \frac{29}{6}$ 339) _____

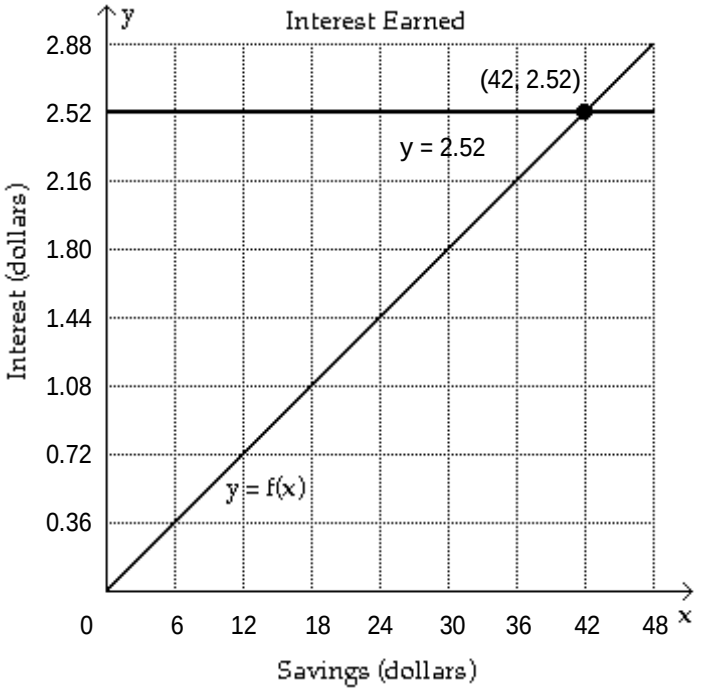
A) $\left(-\infty, \frac{29}{6}\right)$ B) $\left(\frac{29}{6}, \infty\right)$ C) $\left(\frac{11}{3}, \infty\right)$ D) $\left(-\infty, \frac{11}{3}\right)$

340) $\frac{5x + 9}{-4} < -\frac{29}{5}$ 340) _____

A) $\left(-\infty, -\frac{29}{5}\right)$ B) $\left(\frac{71}{25}, \infty\right)$ C) $\left(\frac{71}{5}, \infty\right)$ D) $\left(-\frac{29}{25}, \infty\right)$

Solve the problem.

341) 341) _____



The function f computes the annual interest paid on savings of x dollars with an interest rate of 6%. graph of f and the horizontal line y = 2.52 are shown in the figure. Determine the savings amounts that result in (i) an annual interest less than $2.52 and (ii) an annual interest of $2.52 or more.

A) Between $0 and $42; $42 or more
B) $42 or more; $42
C) Between $6 and $42; $42 or more
D) $42 or less; between $42 and $48

342) A retailer knows that n games can be sold in a month if the price is $20 - 0.3n$ dollars per game. If he buys each game for $2, and if he wishes to make a profit of at least $240 per month on sales of this game, how many games must he sell each month? 342) _____

A) $20 \le n \le 30$
B) $20 \le n \le 60$
C) $20 \le n \le 20$
D) $20 \le n \le 40$

343) A salesperson has two job offers. Company A offers a weekly salary of $450 plus commission of 10% of sales. Company B offers a weekly salary of $900 plus commission of 5% of sales. What is the amount of sales above which Company A's offer is the better of the two? 343) _____

A) $18,000
B) $4500
C) $9100
D) $9000

344) A car rental company has two rental rates. Rate 1 is $45 per day plus $.18 per mile. Rate 2 is $90 per day plus $.09 per mile. If you plan to rent for one day, how many miles would you need to drive to pay less by taking Rate 2? 344) _____

A) More than 250 miles
B) More than 500 miles
C) More than 1000 miles
D) More than 600 miles

Solve the inequality analytically, writing the solution set in interval notation.

345) $0 < -4x \le 16$ 345) _____

A) $[-4, 0]$
B) $(0, 4]$
C) $[-4, 0)$
D) $(-4, 0)$

346) $-8 < 2x + 4 \le 0$ 346) _____

A) $[-6, -2)$
B) $[-6, -2]$
C) $(-6, -2]$
D) $(-6, -2)$

347) $-15 < -5x + 5 \le 5$ 347) _____

A) $[-4, 0)$ B) $(0, 4]$ C) $(-4, 0]$ D) $[0, 4)$

348) $8 < \frac{12x - 14}{8} < 10$ 348) _____

A) $\left(-\frac{47}{6}, \frac{13}{2}\right)$ B) $\left(-\frac{13}{2}, \frac{47}{6}\right)$

C) $\left(\frac{13}{2}, \frac{47}{6}\right)$ D) $\left(-\infty, \frac{13}{2}\right) \cup \left(\frac{47}{6}, \infty\right)$

349) $-10 < \frac{6 - 5x}{2} \le 8$ 349) _____

A) $(-\infty, -2] \cup \left[\frac{26}{5}, \infty\right)$ B) $\left[-2, \frac{26}{5}\right]$

C) $\left[2, \frac{26}{5}\right)$ D) $\left[-2, \frac{26}{5}\right)$

350) $4 < 5x + 4 \le 24$ 350) _____

A) $(0, 4]$ B) $(0, 4)$ C) $[0, 4)$ D) $[0, 4]$

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

Provide an appropriate response.

351) Explain how the equality $-10x - 7x - 2 = -17x - 2$ is supported by the graphs $Y_1 = -10x - 7x - 2$ and $Y_2 = -17x - 2$ in a standard viewing window 351) _____

352) When using the intersection-of-graphs method of graphical solution, explain the significance of the x value at the bottom of the graphing calculator display. 352) _____

353) When using the intersection-of-graphs method of graphical solution, explain the significance of the y value at the bottom of the graphing calculator display. 353) _____

354) When using the intersection-of-graphs method of graphical solution, explain the significance of obtaining two parallel lines in an appropriate viewing window. 354) _____

355) When using the x-intercept method of graphical solution for a linear equation that has no solutions, what would be the appearance of the graphical display? 355) _____

356) When using the x-intercept method of graphical solution for a linear equation that has infinitely many solutions, what would be the appearance of the graphical display? 356) _____

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

357) The functions f(x) and g(x) are linear, and the solution set for $f(x) \ge g(x)$ is $[-7, \infty)$. Furthermore, $f(-7) = g(-7) = 3$. What can you say about f(x) and g(x) for $(-\infty, -7]$? 357) _____

A) $f(x) \le g(x)$
B) $f(x) \ge g(x)$
C) $f(x) > g(x)$
D) Nothing about the relationship between f(x) and g(x) can be determined.

358) Consider two linear functions $Y_1 = f(x)$ and $Y_2 = g(x)$. One student claims that $f(x) > g(x)$ on the interval $(3, \infty)$. Another student claims that $g(x) > f(x)$ on the interval $(-\infty, 3)$. What can you say is true for the two functions at $x = 3$? 358) _____

A) $f(x) > g(x)$
B) $f(x) = g(x)$
C) $f(x) < g(x)$
D) Nothing about the relationship between $f(x)$ and $g(x)$ can be determined.

359) Given two horizontal lines $Y_1 = a$ and $Y_2 = b$ with $a > b$, what is the solution set for $Y_1 > Y_2$? 359) _____

A) $(-\infty, b]$
B) $(-\infty, \infty)$
C) $[b, a]$
D) Cannot be determined

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

360) Given the linear functions $Y_1 = x$ and $Y_2 = 2x$, name the regions where $Y_1 > Y_2$, $Y_1 = Y_2$, and $Y_1 < Y_2$. 360) _____

361) Given the linear functions $Y_1 = ax$, $Y_2 = -ax$, and $Y_3 = bx$ with $a > b$, give the relationship between the functions at $x = 0$, $x > 0$, and $x < 0$. 361) _____

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

Solve the problem.

362) Find the length of a rectangular lot with a perimeter of 140 meters if the length is 4 meters more than the width. 362) _____

A) 74 m
B) 70 m
C) 33 m
D) 37 m

363) The length of a rectangle is 8 inches more than the width. The perimeter of the rectangle is 160 inches. Find the width of the rectangle. 363) _____

A) 8 in.
B) 44 in.
C) 36 in.
D) 40 in.

364) A square plywood platform has a perimeter which is 7 times the length of a side, decreased by 18. Find the length of a side. 364) _____

A) 9 units
B) 6 units
C) 1 unit
D) 3 units

365) A rectangular Persian carpet has a perimeter of 220 inches. The length of the carpet is 18 in. more than the width. What are the dimensions of the carpet? 365) _____

A) Width: 101 in.; length: 119 in.
B) Width: 46 in.; length: 64 in.
C) Width: 64 in.; length: 82 in.
D) Width: 92 in.; length: 110 in.

366) The length of a rectangular billboard is 6 inches more than the width. The perimeter of the billboard is 108 inches. Find the width of the billboard. 366) _____

A) 24 in.
B) 27 in.
C) 30 in.
D) 6 in.

367) The perimeter of a rectangle is 32 cm. One side is 12 cm longer than the other side. Find the lengths of the sides. 367) _____

A) Width: 2 cm; length: 12 cm
B) Width: 2 cm; length: 14 cm
C) Width: 11 cm; length: 23 cm
D) Width: 4 cm; length: 16 cm

368) The perimeter of a rectangle is 32 m. If the width were doubled and the length were increased by 25 m, the perimeter would be 92 m. What are the length and width of the original rectangle? 368) _____

A) Width: 5 m; length: 11 m
B) Width: 8 m; length: 8 m
C) Width: 3 m; length: 8 m
D) Width: 11 m; length: 5 m

369) The front face of a rectangular aquarium has length to width ratio of 5 to 2. The perimeter of the rectangle is 35 inches. Find the length of the rectangle. 369) _____

A) 10 in.
B) 25 in.
C) 12.5 in.
D) 53 in.

370) The width of a rectangular stamp is 1.20 cm greater than the length. If the width and length are both increased by 1.0 cm, the stamp would have a perimeter equal to 19.40 cm. What are the actual dimensions of the stamp? 370) _____

A) 3.25 cm × 4.45 cm
B) 3.25 cm × 8.90 cm
C) 7.50 cm × 8.70 cm
D) 3.75 cm × 4.35 cm

371) The aspect ratio (length to width) of an LCD computer monitor is 5 : 4. The LCD monitor of a Toshiba laptop computer has a perimeter of 32.4 inches. What is the diagonal measure of the screen. Round your answer to the nearest tenth of an inch? 371) _____

A) 4.0 in.
B) 16.2 in.
C) 132.8 in.
D) 11.5 in.

372) How many liters of a solution that is 40% alcohol must be mixed with 60 liters of a solution that is 80% alcohol to get a solution that is 50% alcohol? 372) _____

A) 18 L
B) 180 L
C) 240 L
D) 24 L

373) In a chemistry class, 5 liters of a 4% silver iodide solution must be mixed with a 10% solution to get a 6% solution. How many liters of the 10% solution are needed? 373) _____

A) 1.5 L
B) 2.5 L
C) 3.5 L
D) 5.0 L

374) For small jobs, a contractor mixes concrete from bags of pre-mix. How many bags with 4% cement should he mix with 6 bags of 19% cement to produce a mix containing 10% cement? 374) _____

A) 20 bags
B) 11 bags
C) 9 bags
D) 15 bags

375) Anne and Nancy use a metal alloy that is 14.6% copper to make jewelry. How many ounces of an alloy that is 12% copper must be mixed with an alloy that is 25% copper to make 100 ounces of the desired alloy? 375) _____

A) 80 ounces
B) 82 ounces
C) 20 ounces
D) 25 ounces

376) The annual sales of a company's best-selling appliance can be modeled by the linear function 376) _____

$$S(x) = 80x + 2700,$$

where S(x) represents the number of appliances sold in year x, with x = 0 corresponding to 1982. Fin number of appliances sold in 1989.

A) 3180 appliances
B) 6440 appliances
C) 6520 appliances
D) 3260 appliances

377) The annual sales of a company's best-selling appliance can be modeled by a linear function. Suppose that the sales, in dollars, were 11,000 in 1997 and 57,000 in 2002. Find a linear function for annual sales, S(x), letting x = 0 represent 1997. 377) _____

A) $S(x) = 9200x + 57{,}000$
B) $S(x) = 46{,}000x + 57{,}000$
C) $S(x) = 46{,}000x + 11{,}000$
D) $S(x) = 9200x + 11{,}000$

378) In his first year at a publishing company Stephen received a salary of $16,000 and was given no bonus. At the start of his second year with the company, he was given a salary increase of 6%. At the end of the year he received a bonus of $900. What was Stephen's total compensation in the second year? 378) _____

A) $14,245 B) $26,500 C) $16,900 D) $17,860

379) The function given by the equation y = 3.785x will convert x gallons into approximately y liters. If a container can hold 24 gallons, how many liters can it hold? Round your answer to two decimal places. 379) _____

A) 91.41 L B) 90.84 L C) 90.14 L D) 90.98 L

380) An average score of 90 for 5 exams is needed for a final grade of A. John's first 4 exam grades are 79, 89, 97, and 95. Determine the minimum grade John needs on the fifth exam to get an A in the course. 380) _____

A) 90 B) 95 C) 100 D) 85

381) An average score of 70 for 6 exams is needed for a final grade of C. Jane's first 5 exam scores are 65, 70, 55, 82 and 87. Determine the minimum score Jane needs on the sixth exam to get a C in the course. 381) _____

A) 72 B) 60 C) 85 D) 61

382) A student earned scores of 85, 83, 90, 94, 88, and 84 on the first six tests in a biology class. What score is needed on the seventh test to result in an average score of 86? 382) _____

A) 80 B) 81 C) 78 D) 79

383) Jim has gotten scores of 80 and 61 on his first two tests. What score must he get on his third test to keep an average of 80 or greater? 383) _____

A) At least 73.7 B) At least 98 C) At least 99 D) At least 70.5

384) Mary, the owner of Vitallo's Pizza Parlor, had start-up costs of $5100. The ingredients for each pizza cost $4.50, and she sells each pizza for $9. She has no other expenses. Express the cost C as a function of x, where x represents the number of pizzas sold. 384) _____

A) C(x) = 5100x + 4.50 B) C(x) = 4.50x + 9
C) C(x) = 4.50x + 5100 D) C(x) = 4.50x + 5109

385) Georgianna, the owner of Petrillo's Pizza, had start-up costs of $4200. The ingredients for each pizza cost $4.75, and she sells each pizza for $12. Georgianna has no other expenses. Express the revenue R as a function of x, where x represents the number of pizzas sold. 385) _____

A) R(x) = 4.75x B) R(x) = 4200x C) R(x) = 16.75x D) R(x) = 12x

386) Regrind, Inc. regrinds used typewriter platens. The cost to buy back each used platen is $1.30. The fixed cost to run the grinding machine is $98 per day. If the company sells the reground platens for $3.30, how many must be reground daily to break even? (Assume that there are no unsold platens at the end of the day.) 386) _____

A) 21 platens B) 32 platens C) 75 platens D) 49 platens

387) George Higgendorf sells used books. He had start-up costs of $4000 and pays $2.50 for each book. He sells each book for $5.50. Express the revenue R as a function of x, where x represents the number of books sold. 387) _____

A) R(x) = 4000x B) R(x) = 2.50x C) R(x) = 5.50x D) R(x) = 8x

388) Northwest Molded molds plastic handles which cost $0.60 per handle to mold. The fixed cost to run the molding machine is $1577 per week. If the company sells the handles for $1.60 each, how many handles must be molded weekly to break even? (Assume that there are no unsold handles at the end of the week.) 388) _____

A) 1577 handles B) 1051 handles C) 716 handles D) 2628 handles

389) Bill Monotone sells CDs for $7.75 each. His initial cost to set up the business was $5700, and each CD costs him $4.75. Express the cost C as a function of x, where x represents the number of CDs sold. 389) _____

A) C(x) = 7.75x + 5700 B) C(x) = 4.75x + 5700
C) C(x) = 5700x + 7.75 D) C(x) = 5700x + 4.75

390) Jane Hightone sells CDs for $8.75 each. Her initial cost to set up the business was $6300, and each CD costs her $5.00. Express the revenue R as a function of x, where x represents the number of CDs sold. 390) _____

A) R(x) = 5.00x B) R(x) = 13.75x
C) R(x) = 5.00x + 6300 D) R(x) = 8.75x

391) Midtown Delivery Service delivers packages which cost $1.30 per package to deliver. The fixed cost to run the delivery truck is $100 per day. If the company charges $5.30 per package, how many packages must be delivered daily to break even? 391) _____

A) 16 packages B) 76 packages C) 25 packages D) 15 packages

392) A lumber yard has fixed costs of $7727.30 a day and marginal costs of $0.98 per board-foot produced. The company gets $2.88 per board-foot sold. How many board-feet must be produced (and sold) daily to break even? 392) _____

A) 4067 board-feet B) 2001 board-feet
C) 2711 board-feet D) 7884 board-feet

393) How long is the shadow cast by a person 6 feet tall when a flagpole 20 feet tall casts a shadow 40 feet long? 393) _____

A) 3.3 ft B) 12 ft C) 120 ft D) 6.7 ft

394) A tree casts a shadow 36 m long. At the same time, the shadow cast by a 59-cm tall statue is 50 cm long. Find the height of the tree. Round your answer to the nearest meter, if necessary. 394) _____

A) 30 m B) 42 m C) 41 m D) 31 m

395) A church steeple casts a shadow 112 ft long, and at the same time a 8-ft post casts a shadow 5 ft long. How high is the steeple? Round your answer to the nearest foot, if necessary. 395) _____

A) 125 ft B) 8 ft C) 179 ft D) 70 ft

396) Maria and Charlie can deliver 86 papers in 2 hours. How long would it take them to deliver 129 papers? 396) _____

A) 4.5 hr B) 3 hr C) 1.3 hr D) 258 hr

397) Last season, a basketball player attempted 136 free-throws and made 100. This season his free-throw percentage is identical to last year's. If he has attempted 51 free throws this season, how many has he made? Round your answer to the nearest whole number. 397) _____

A) 38 free-throws B) 31 free-throws C) 69 free-throws D) 35 free-throws

398) The time T necessary to make an enlargement of a photo negative varies directly as the area A of the enlargement. If 84 seconds are required to make a 3-by-7 enlargement, find the time required for a 7-by-10 enlargement. 398) _____

A) 350 sec B) 280 sec C) 210 sec D) 420 sec

399) Hooke's Law for an elastic spring states that the distance a spring stretches varies directly as the force applied. If a force of 10 pounds stretches a certain spring 7 inches, then how mu will a force of 20 pounds stretch the spring? 399) _____

A) 3 in. B) 14 in. C) 70 in. D) 4 in.

400) Hooke's Law for an elastic spring states that the distance a spring stretches varies directly as the force applied. If a spring stretches 0.6 m when a 9-kg weight is attached to it, how mu will it stretch when a 21-kg weight is attached to it? 400) _____

A) 0.4 m B) 4.4 m C) 3.4 m D) 1.4 m

401) Find the constant of variation k. Assume that y is directly proportional to x. 401) _____

x	3	4	7	8
y	19.2	25.6	44.8	51.2

A) 0.4 B) 6.4 C) -6.4 D) -0.4

Solve the formula for the specified variable.

402) $A = \frac{1}{2}bh$ for b 402) _____

A) $b = \frac{A}{2h}$ B) $b = \frac{Ah}{2}$ C) $b = \frac{2A}{h}$ D) $b = \frac{h}{2A}$

403) $S = 2\pi rh + 2\pi r^2$ for h 403) _____

A) $h = \frac{S}{2\pi r} - 1$ B) $h = 2\pi(S - r)$ C) $h = \frac{S - 2\pi r^2}{2\pi r}$ D) $h = S - r$

404) $V = \frac{1}{3}Bh$ for h 404) _____

A) $h = \frac{3B}{V}$ B) $h = \frac{V}{3B}$ C) $h = \frac{B}{3V}$ D) $h = \frac{3V}{B}$

405) $I = \frac{nE}{nr + R}$ for n 405) _____

A) $n = \frac{-R}{Ir - E}$ B) $n = \frac{-IR}{Ir - E}$ C) $n = \frac{IR}{Ir + E}$ D) $n = IR(Ir - E)$

406) $P = s_1 + s_2 + s_3$ for s_1 406) _____

A) $s_1 = P + s_2 + s_3$ B) $s_1 = s_2 + s_3 - P$ C) $s_1 = s_2 + P - s_3$ D) $s_1 = P - s_2 - s_3$

407) $F = \frac{9}{5}C + 32$ for C 407) _____

A) $C = \frac{5}{9}(F - 32)$ B) $C = \frac{9}{5}(F - 32)$ C) $C = \frac{5}{F - 32}$ D) $C = \frac{F - 32}{9}$

408) $A = \frac{1}{2}h(b_1 + b_2)$ for b_1 408) _____

A) $b_1 = \frac{2Ab_2}{h} - 1$ B) $b_1 = \frac{A - b_2h}{2h}$ C) $b_1 = b_2 - \frac{2A}{h}$ D) $b_1 = \frac{2A}{h} - b_2$

409) $a + b = s + r$ for r 409) _____

A) $r = \frac{a + b}{s}$ B) $r = a + b - s$ C) $r = s(a + b)$ D) $r = \frac{a}{s} + b$

410) $A = P(1 + nr)$ for n 410) _____

A) $n = \frac{A}{r}$ B) $n = \frac{Pr}{A - P}$ C) $n = \frac{A - P}{Pr}$ D) $n = \frac{P - A}{Pr}$

Solve the problem.

411) Mardi received an inheritance of $60,000. She invested part at 9% and deposited the remainder in tax-free bonds at 8%. Her total annual income from the investments was $5200. Find the amount invested at 9%. 411) _____

A) $20,000 B) $39,000 C) $54,800 D) $40,000

412) Walt made an extra $7000 last year from a part-time job. He invested part of the money at 6% and the rest at 9%. He made a total of $510 in interest. How much was invested at 9%? 412) _____

A) $3000 B) $3500 C) $5000 D) $4000

413) Roberto invested some money at 6%, and then invested $3000 more than twice this amount at 11%. His total annual income from the two investments was $4530. How much was invested at 11%? 413) _____

A) $30,000 B) $3300 C) $9000 D) $33,000

Answer Key
Testname: UNTITLED1

1) B
2) C
3) A
4) C
5) B
6) B
7) B
8) B
9) B
10) B
11) C
12) C
13) C
14) C
15) B
16) B
17) D
18) C
19) B
20) A
21) A
22) B
23) A
24) D
25) B
26) A
27) D
28) C
29) D
30) D
31) A
32) D
33) B
34) D
35) C
36) D
37) C
38) B
39) D
40) C
41) C
42) A
43) C
44) C
45) D
46) D
47) B
48) B
49) A
50) B

51) C
52) B
53) D
54) A
55) C
56) C
57) D
58) C
59) B
60) D
61) B
62) C
63) D
64) C
65) D
66) D
67) D
68) D
69) A
70) A
71) A
72) B
73) B
74) C
75) D
76) C
77) B
78) A
79) B
80) B
81) A
82) B
83) A
84) C
85) B
86) C
87) A
88) A
89) B
90) D
91) D
92) A
93) B
94) D
95) B
96) D
97) D
98) D
99) C
100) D

101) D
102) C
103) D
104) D
105) C
106) A
107) A
108) B
109) D
110) A
111) B
112) B
113) B
114) A
115) B
116) A
117) B
118) A
119) A
120) A
121) B
122) A
123) B
124) A
125) B
126) A
127) B
128) A
129) A
130) B
131) B
132) A
133) A
134) A
135) B
136) A
137) A
138) B
139) B
140) B
141) C
142) B
143) C
144) A
145) B
146) B
147) B
148) D
149) C
150) C

151) D
152) B
153) A
154) C
155) D
156) C
157) D
158) D
159) A
160) B
161) D
162) B
163) C
164) B
165) A
166) C
167) B
168) D
169) B
170) C
171) C
172) B
173) D
174) A
175) D
176) C
177) A
178) D
179) D
180) C
181) C
182) A
183) D
184) B
185) B
186) B
187) A
188) C
189) A
190) C
191) A
192) A
193) D
194) D
195) D
196) D
197) B
198) A
199) D
200) C

201) A
202) B
203) A
204) C
205) B
206) A
207) C
208) A
209) B
210) C
211) C
212) B
213) D
214) D
215) D
216) A
217) A
218) B
219) A
220) D
221) B
222) C
223) D
224) D
225) A
226) D
227) C
228) A
229) B
230) A
231) B
232) C
233) C
234) D
235) B
236) D
237) D
238) B
239) D
240) D
241) B
242) B
243) D
244) C
245) C
246) C
247) B
248) B
249) C
250) B

251) C
252) B
253) A
254) B
255) D
256) C
257) A horizontal line has slope 0. The line perpendicular to this is vertical with undefined slope.
258) C
259) Answers will vary. One possibility: The slope of the line through P_1 and P_2 is -2/3. The slope of the line through P_2 and P_3 is 3/2. Therefore, since the product of these slopes is -1, the lines are perpendicular and constitute a right angle in the triangle, making the triangle formed by these points a right triangle.
260) D
261) D
262) C
263) B
264) A
265) A
266) D
267) A
268) D
269) A
270) A
271) C
272) B
273) B
274) C
275) D
276) D
277) C
278) C
279) A
280) B
281) B
282) A
283) A
284) A
285) C
286) A
287) A
288) D
289) A
290) D
291) A
292) C
293) C
294) A
295) B
296) C
297) A

298) D
299) B
300) D
301) D
302) C
303) C
304) C
305) A
306) C
307) D
308) A
309) A
310) C
311) C
312) A
313) B
314) B
315) B
316) A
317) B
318) C
319) C
320) C
321) B
322) C
323) D
324) C
325) A
326) D
327) D
328) A
329) C
330) C
331) C
332) B
333) C
334) D
335) A
336) D
337) C
338) C
339) D
340) B
341) A
342) D
343) D
344) B
345) C
346) C
347) D

348) C
349) D
350) A
351) The graphs would appear to coincide.
352) It is the x value at the point of intersection of the two lines, which is the solution to the linear equation.
353) It is the value of each side of a linear equation at the solution value.
354) It means the linear equation has no solutions.
355) There would be a horizontal line above or below the x-axis.
356) There would be a horizontal line that coincides with the x-axis.
357) A
358) B
359) B
360) $Y_1 > Y_2$ on $(-\infty, 0)$; $Y_1 = Y_2$ at $x = 0$; $Y_1 < Y_2$ on $(0, \infty)$.
361) On $(0, \infty)$, $Y_1 > Y_3 > Y_2$; at $x = 0$, $Y_1 = Y_2 = Y_3$; on $(-\infty, 0)$, $Y_1 < Y_3 < Y_2$.
362) D
363) C
364) B
365) B
366) A
367) B
368) A
369) C
370) A
371) D
372) B
373) B
374) C
375) A
376) D
377) D
378) D
379) B
380) A
381) D
382) C
383) C
384) C
385) D
386) D
387) C
388) A
389) B
390) D
391) C
392) A
393) B
394) B
395) C
396) B

397) A
398) B
399) B
400) D
401) B
402) C
403) C
404) D
405) B
406) D
407) A
408) D
409) B
410) C
411) D
412) A
413) D