Test Bank for College Algebra 11th Edition by Lial
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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

List the ordered pairs from the table.

1) 1) _____

x	y
4	-9
5	-12
7	-18
8	-21

A) (4, -21), (5, -18), (7, -12), (8, -9)
B) (4, -12), (5, -9), (7, -21), (8, -18)
C) (4, -9), (5, -12), (7, -18), (8, -21)
D) (-9, 4), (-12, 5), (-18, 7), (-21, 8)

2) 2) _____

Sales at the University Bookstore

Month	Sales
1	$500,000
2	$220,000
3	$1,190,000
4	$420,000

A) (500,000, 1), (220,000, 2), (1,190,000, 3), (420,000, 4)
B) (1, 220,000), (2, 500,000), (3, 420,000), (4, 1,190,000)
C) (420,000, 1), (1,190,000, 2), (220,000, 3), (500,000, 4)
D) (1, 500,000), (2, 220,000), (3, 1,190,000), (4, 420,000)

For the points P and Q, find the distance d(P, Q).

3) P(2, 5), Q(-1, -3) 3) _____
A) 24 B) -5 C) $\sqrt{55}$ D) $\sqrt{73}$

4) P(3, -5), Q(5, -1) 4) _____
A) $2\sqrt{5}$ B) 2 C) $12\sqrt{3}$ D) 12

5) P(-6, -1), Q(6, 3) 5) _____
A) $128\sqrt{2}$ B) $4\sqrt{10}$ C) 8 D) 128

6) P(4, 5), Q(-1, -5) 6) _____
A) 5 B) $75\sqrt{3}$ C) $5\sqrt{5}$ D) 75

7) $P(5\sqrt{7}, -3\sqrt{11})$, $Q(9\sqrt{7}, -2\sqrt{11})$ 7) _____
A) 123 B) $\sqrt{-17}$ C) $\sqrt{123}$ D) -17

For the points P and Q, find the coordinates of the midpoint of the segment PQ.

8) P(7, 4), Q(1, 5) 8) _____
A) $\left(3, -\frac{1}{2}\right)$ B) (8, 9) C) (6, -1) D) $\left(4, \frac{9}{2}\right)$

9) P(6, -4), Q(-7, 7) 9) _____
A) $\left(-\frac{1}{2}, \frac{3}{2}\right)$ B) $\left(\frac{13}{2}, -\frac{11}{2}\right)$ C) (-1, 3) D) (13, -11)

10) P(-6, -9), Q(9, 0) 10) _____
A) $\left(\frac{3}{2}, -\frac{9}{2}\right)$ B) (3, -9) C) $\left(-\frac{15}{2}, -\frac{9}{2}\right)$ D) (-15, -9)

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11) P(-1, 8), Q(-3, 5) 11) _____

A) $\left(-2, \frac{13}{2}\right)$ B) (-4, 13) C) $\left(1, \frac{3}{2}\right)$ D) (2, 3)

12) P($9\sqrt{5}$, $-\sqrt{10}$), Q($-\sqrt{5}$, 0) 12) _____

A) $\left(4\sqrt{5}, -\frac{\sqrt{10}}{2}\right)$ B) (- 5, 10) C) $\left(4\sqrt{10}, -\frac{\sqrt{30}}{2}\right)$ D) $\left(5\sqrt{5}, \frac{\sqrt{10}}{2}\right)$

13) P($9\sqrt{7}$, $\sqrt{13}$), Q($-\sqrt{7}$, $4\sqrt{13}$) 13) _____

A) $\left(4\sqrt{14}, -\frac{\sqrt{39}}{2}\right)$ B) $\left(4\sqrt{7}, \frac{5\sqrt{13}}{2}\right)$ C) $\left(5\sqrt{7}, \frac{\sqrt{13}}{2}\right)$ D) $\left(4\sqrt{7}, 5\sqrt{13}\right)$

14) P($-\sqrt{2}$, 1), Q(0, $\sqrt{7}$) 14) _____

A) $\left(\frac{\sqrt{2}}{2}, \frac{1-\sqrt{7}}{2}\right)$ B) $\left(\frac{-\sqrt{2}+\sqrt{7}}{2}, \frac{1}{2}\right)$ C) $\left(-\frac{\sqrt{2}}{2}, \frac{1+\sqrt{7}}{2}\right)$ D) ($-\sqrt{2}$, $1+\sqrt{7}$)

Determine whether the three points are the vertices of a right triangle.

15) (6, -6), (9, -6), (9, 1) 15) _____

A) Yes B) No

16) (-5, 3), (-3, 7), (-1, 6) 16) _____

A) Yes B) No

17) (1, 4), (7, 6), (11, -6) 17) _____

A) Yes B) No

18) (7, 0), (13, 2), (12, -3) 18) _____

A) Yes B) No

19) (2, 6), (8, 8), (14, 1) 19) _____

A) Yes B) No

20) (-11, 6), (0, -5), (2, -3) 20) _____

A) Yes B) No

Determine whether the three points are collinear.

21) (-14, -9), (-8, -5), (-20, -13) 21) _____

A) Yes B) No

22) (3, -10), (-2, -7), (0, -5) 22) _____

A) Yes B) No

23) (-1, -3), (1, 1), (9, 17) 23) _____

A) Yes B) No

24) (7, -3), (-2, 5), (1, 1) 24) _____

A) Yes B) No

Find the coordinates of the other endpoint of the segment, given its midpoint and one endpoint.

25) midpoint $(-1, 9)$, endpoint (-4, 5) 25) _____

A) (2, 1) B) (-10, -3) C) (2, 13) D) (4, 11)

26) midpoint $(-2, 1)$, endpoint (3, 2) 26) _____
A) (1, -8) B) (13, 4) C) (-7, 0) D) (-7, 3)

27) midpoint $(13, 1)$, endpoint (10, 5) 27) _____
A) (2, 11) B) (4, 13) C) (16, -3) D) (16, 9)

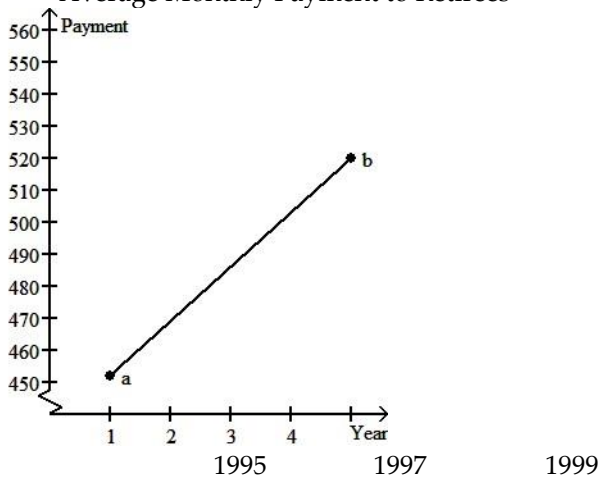
28) midpoint $(-1, -8)$, endpoint (3, -10) 28) _____
A) (-5, -12) B) (11, -14) C) (-5, -6) D) (7, -18)

29) midpoint (d, y), endpoint (m, q) 29) _____
A) (2m - d, 2q - y) B) (2d - m, 2y - q)
C) $\left(\frac{d+m}{2}, \frac{y+q}{2}\right)$ D) (d - m, y - q)

30) midpoint $\left(\frac{p+d}{2}, \frac{q-w}{2}\right)$, endpoint (p, q) 30) _____
A) (d, w) B) $\left(\frac{d}{2}, -\frac{w}{2}\right)$
C) (d, - w) D) $\left(\frac{3p+d}{4}, \frac{3q-w}{4}\right)$

Solve the problem.

31) The graph shows an idealized linear relationship for the average monthly payment to retirees from 1995 to 1999. Use the midpoint formula to estimate the average payment in 1997. 31) _____



a = $452; b = $520

A) $34 B) $500 C) $520 D) $486

32) The table lists how financial aid income cutoffs (in dollars) for a family of four have changed over time. Use the midpoint formula to approximate the financial aid cutoff for 1985. 32) _____

Year	Income (in dol
1960	21,000
1970	27,000
1980	33,000
1990	39,000
2000	45,000

_____

A) $21,000 B) $18,000 C) $36,000 D) $57,000

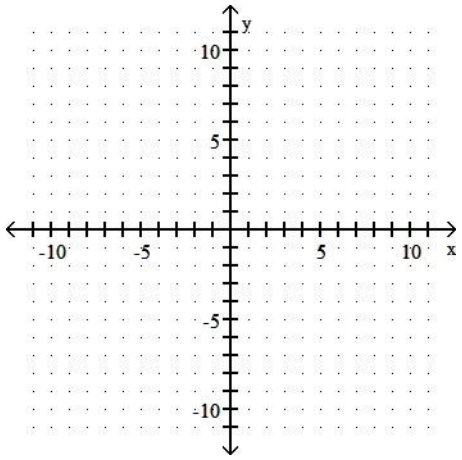
33) The table shows enrollment in 2-year technical schools for 1980, 1990 and 2000. Assuming a linear relationship, estimate the enrollment for 1995. 33) _____

Year	Enrollment (in millions)
1980	2.4
1990	3.1
2000	3.8

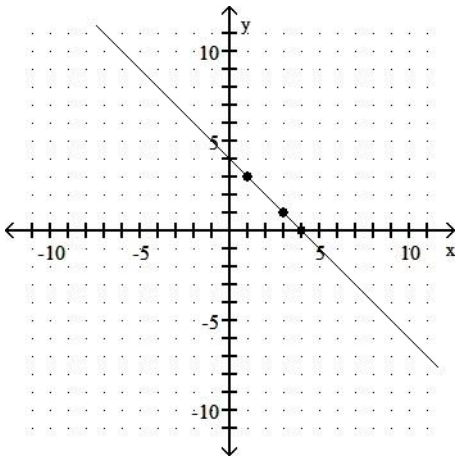
A) 2.4 million B) 1.75 million C) 5.15 million D) 3.45 million

Graph the equation by determining the missing values needed to plot the ordered pairs.

34) y + x = 4; (1,), (4,), (3,) 34) _____



A)



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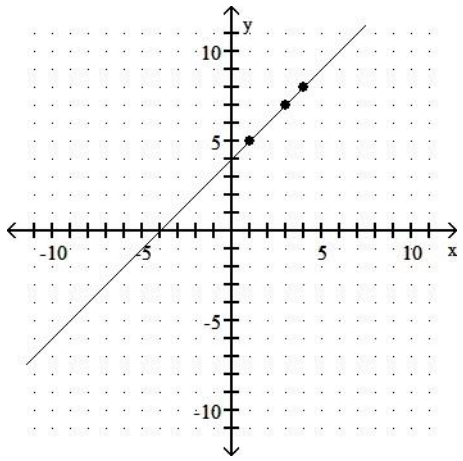

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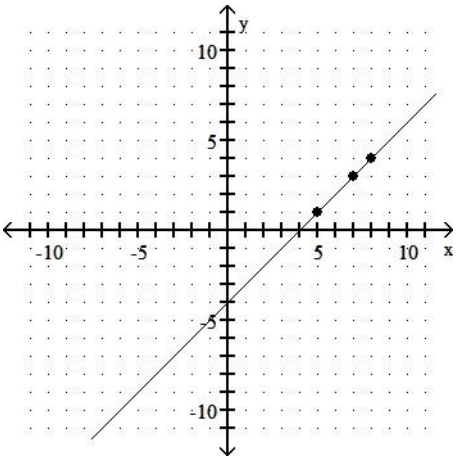

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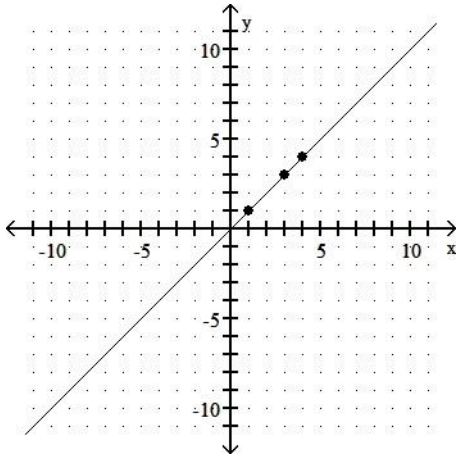
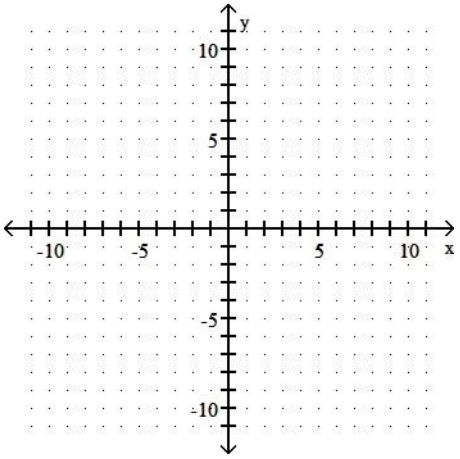
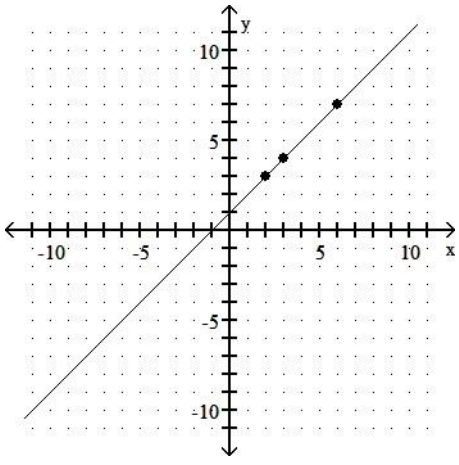


35) y - x = -1; (4,), (, 6), (3,)

35) _____



A)



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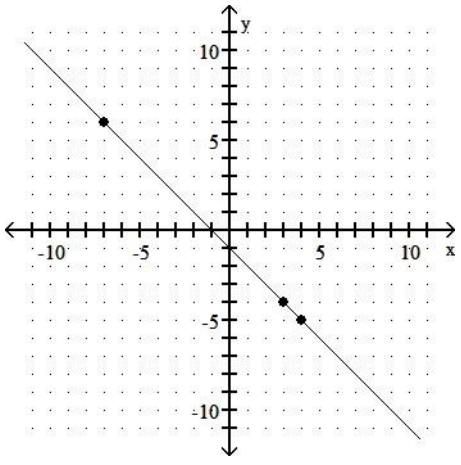

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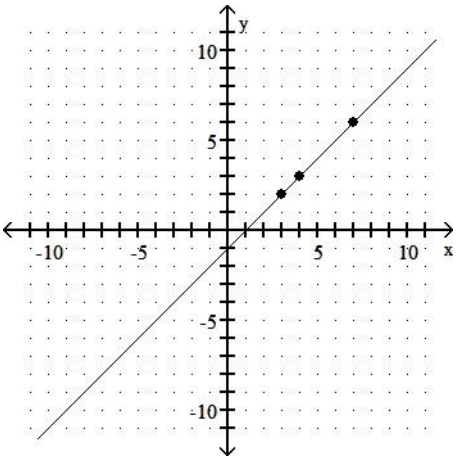

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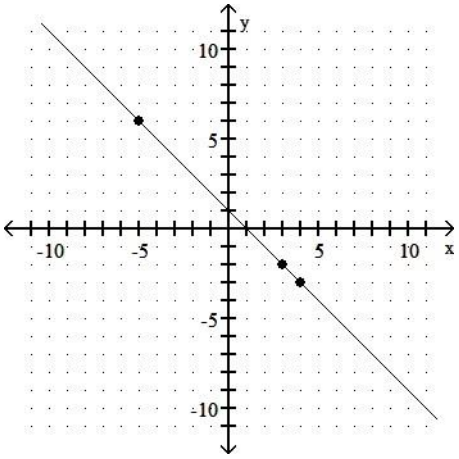
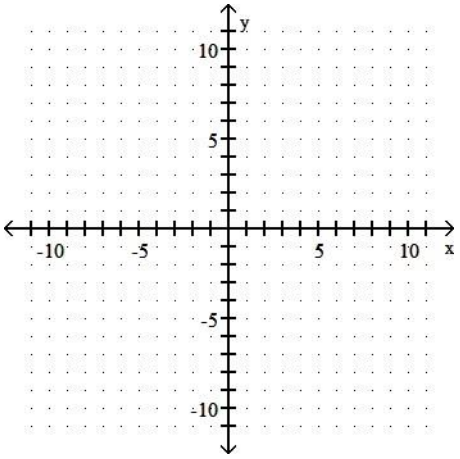
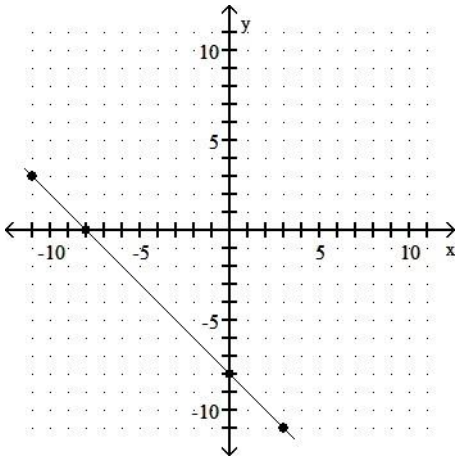


36) x - 2y = -8; (0,), (, 0), (3,), (, 3)

36) _____



A)



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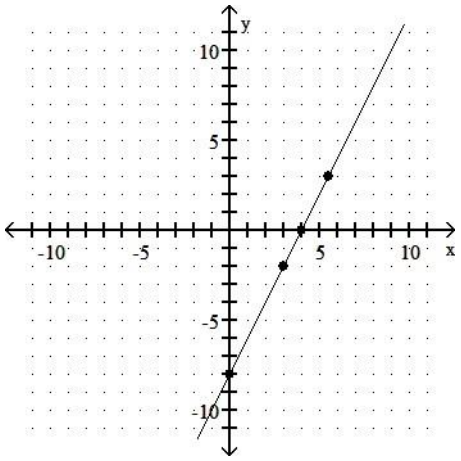

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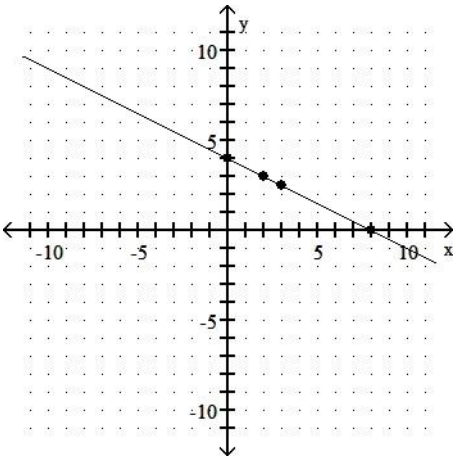
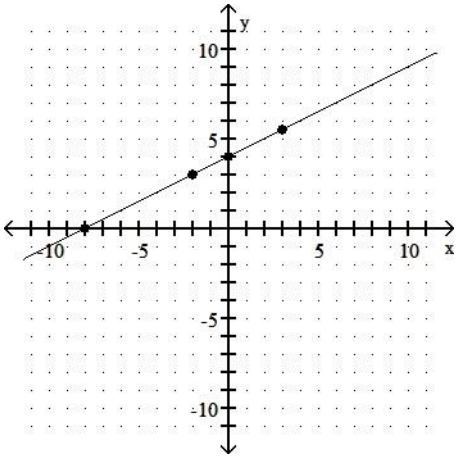
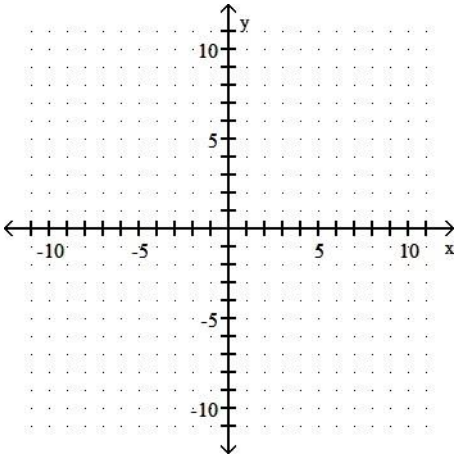


D)

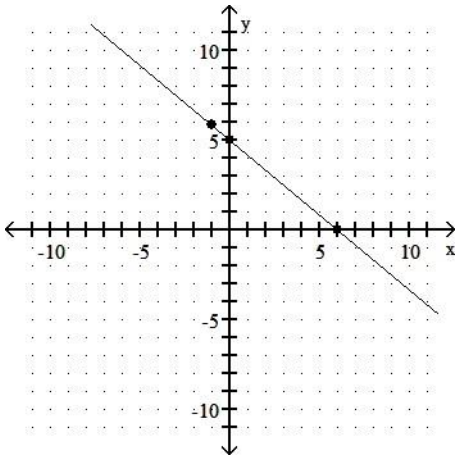


37) 5x - 6y = -30; (0,), (, 0), (-1,)

37) _____



A)



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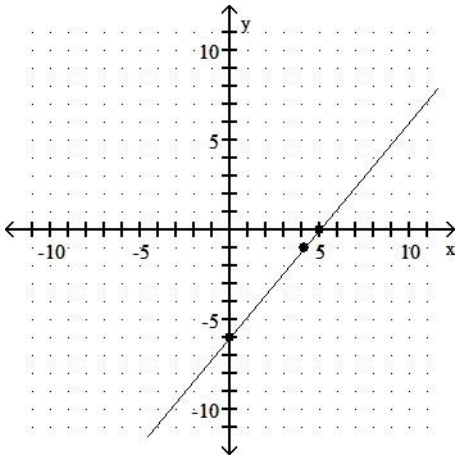

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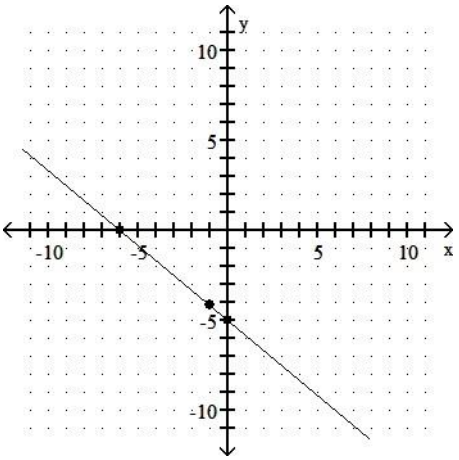

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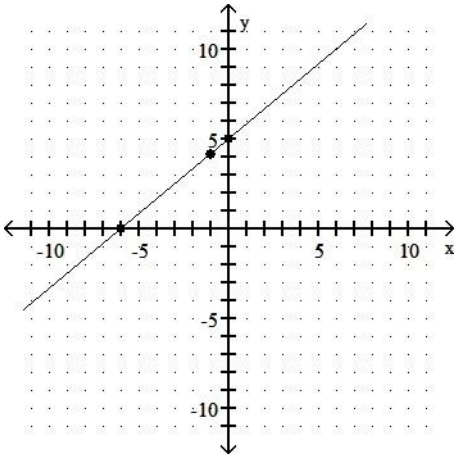
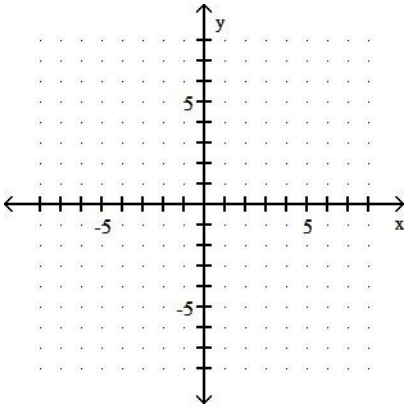
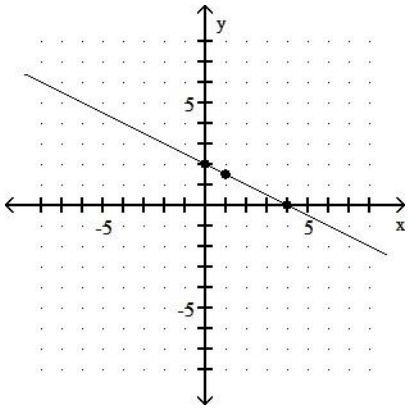


38) $4y = -2x + 8$; (0,), (, 0), (1,)

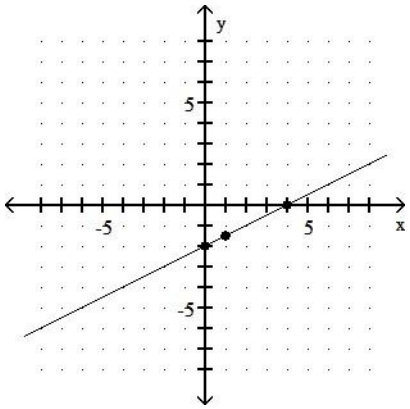
38) _____



A)



B)



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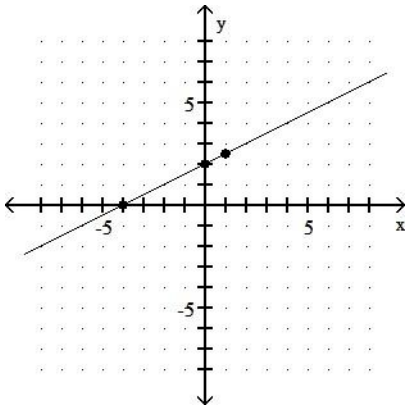
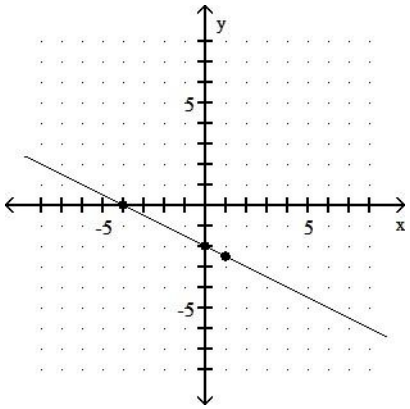
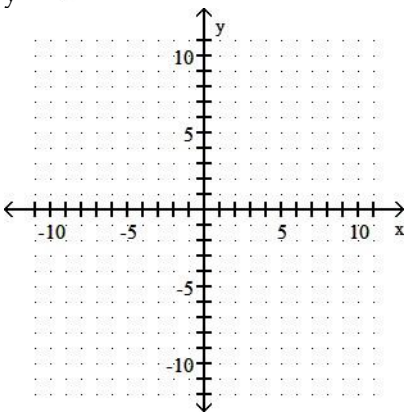


D)

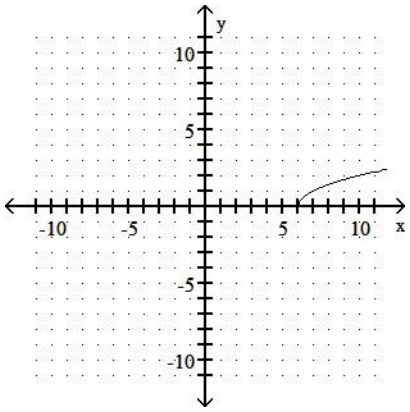


Graph the equation by plotting points.

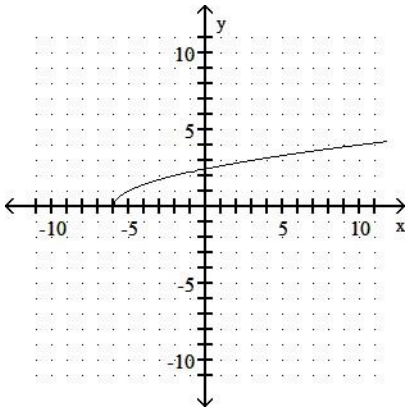
39) $y = \sqrt{x - 6}$ 39) _____



A)



B)



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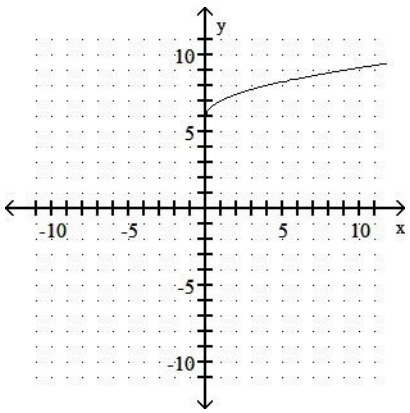

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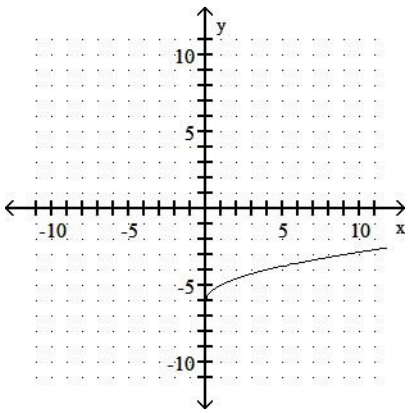
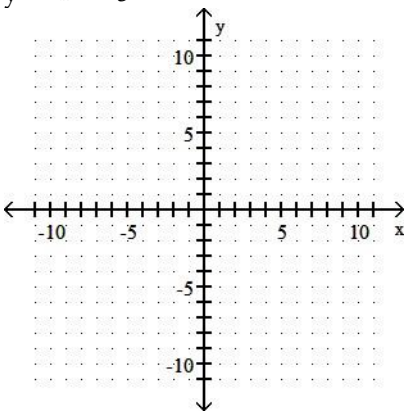
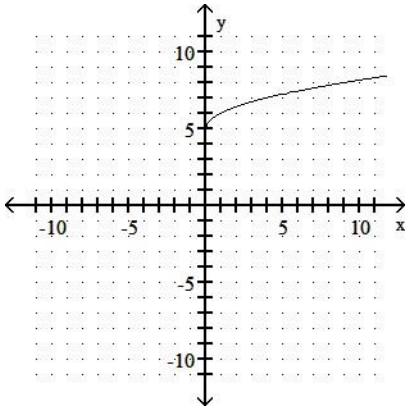


40) $y = \sqrt{x} - 5$ 40) _____



A)



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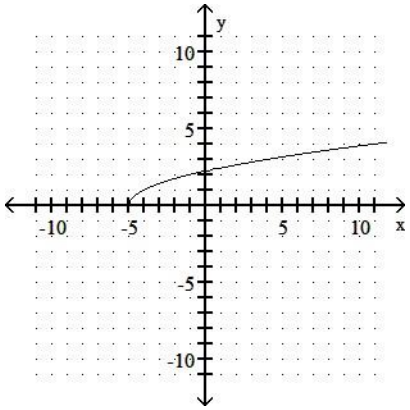

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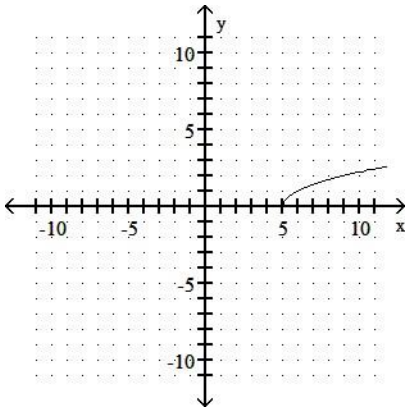

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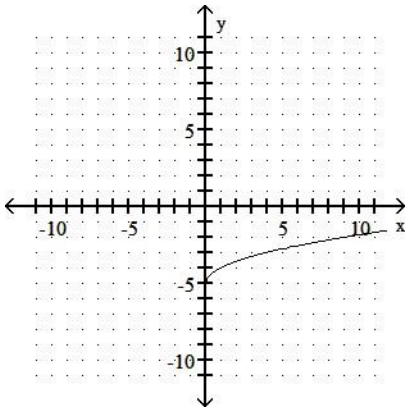
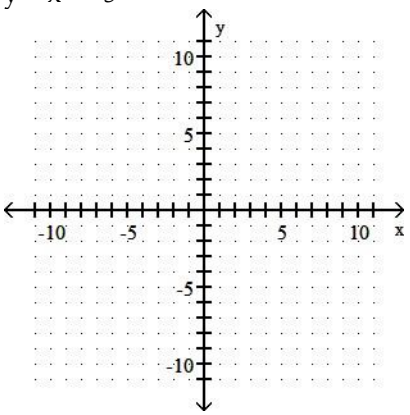
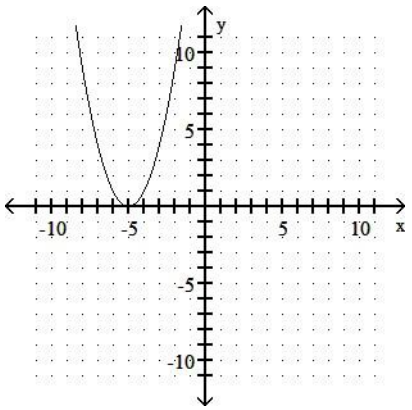


41) $y = x^2 + 5$ 41) _____



A)



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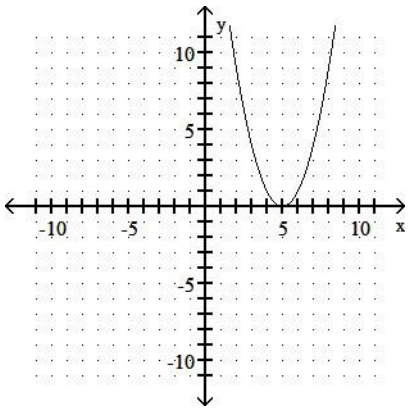
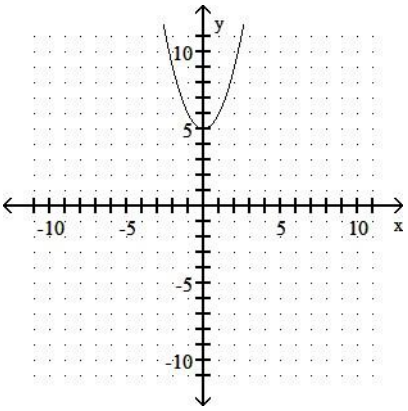


C)



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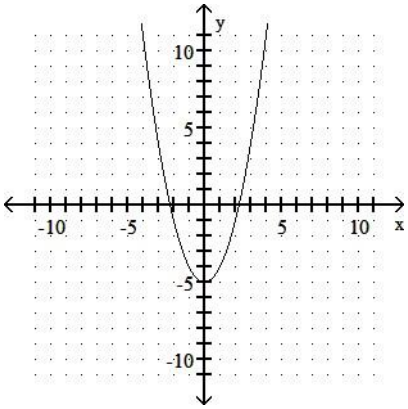
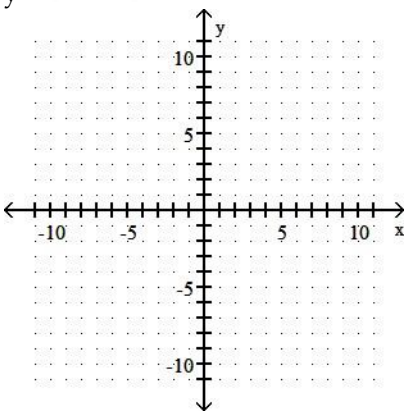


42) $y = |-4 - x|$

42) _____



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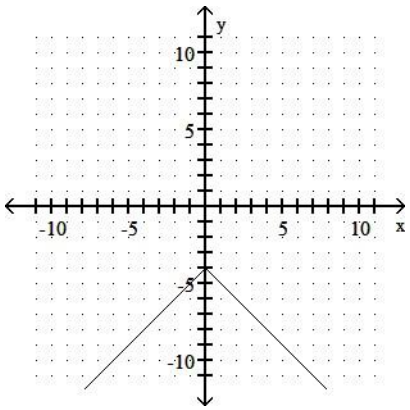

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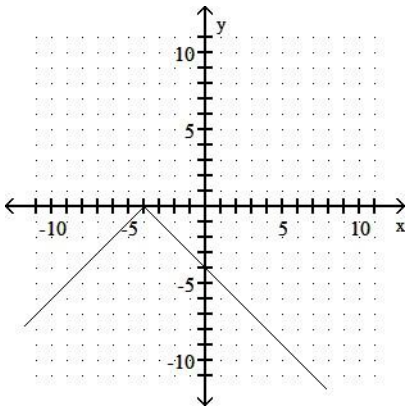

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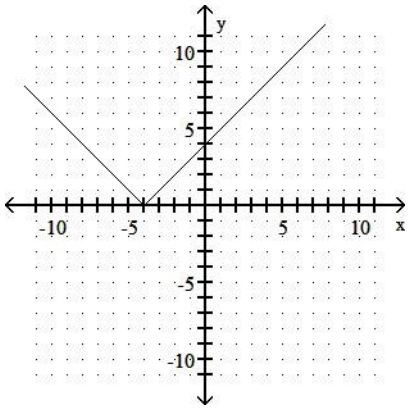

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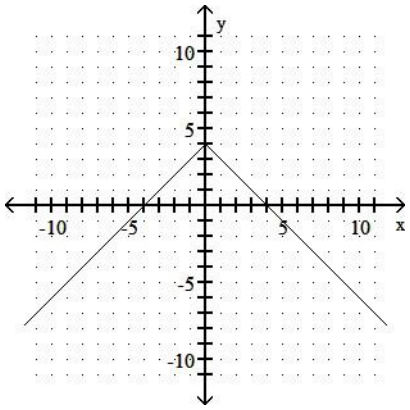
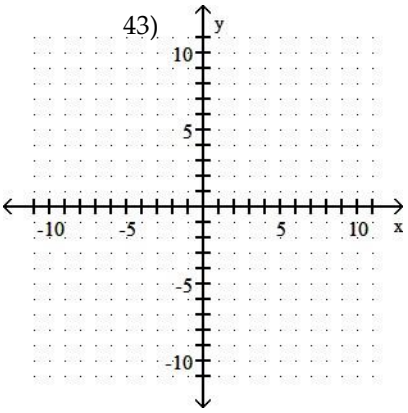


43) $y = |x| + 2$

43) 

___
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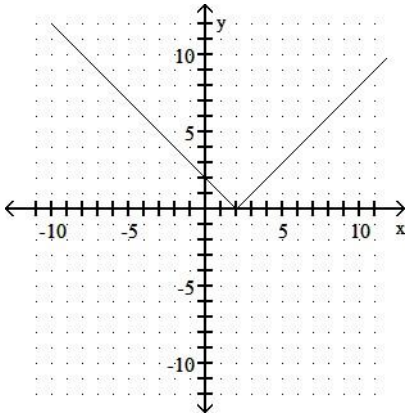
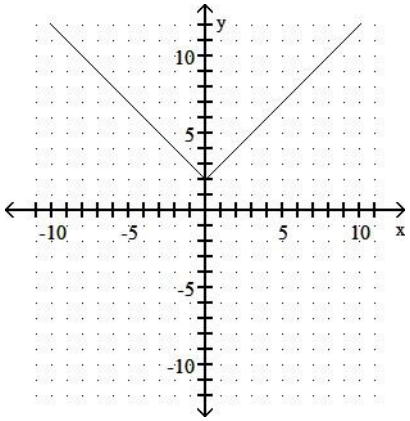
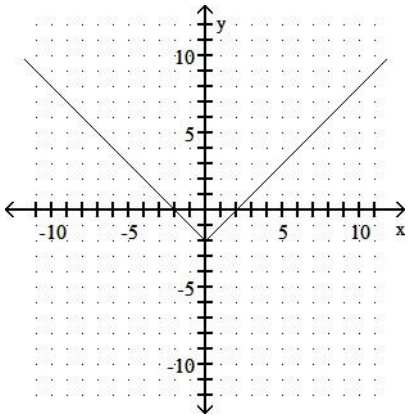
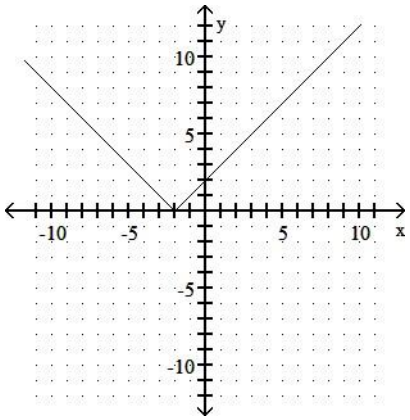
A) 

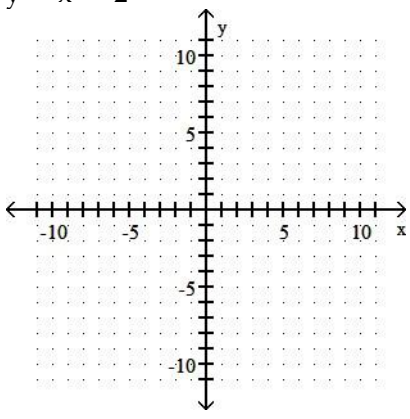
B) 

C) 

D) 

44) $y = -x^2 + 2$

44) _____



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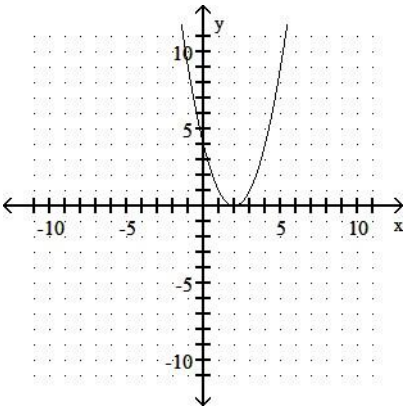

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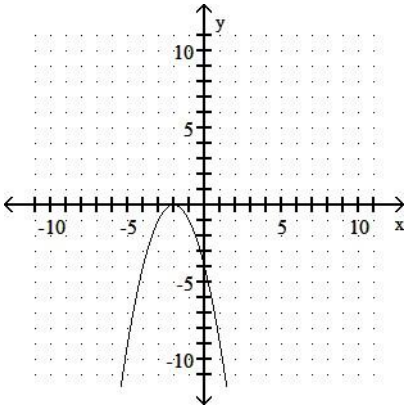

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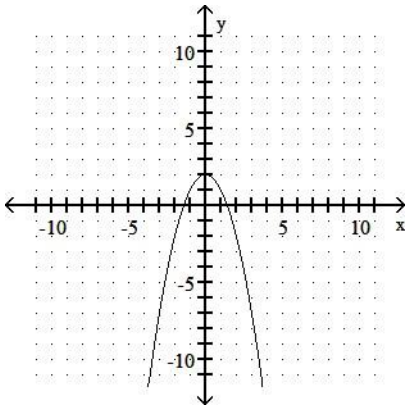

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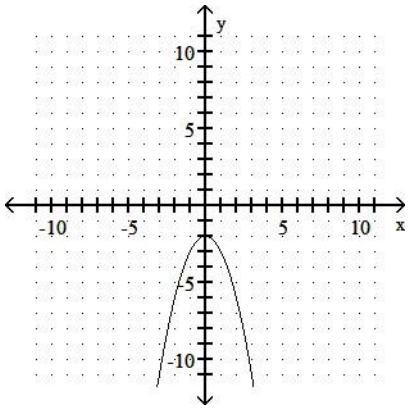
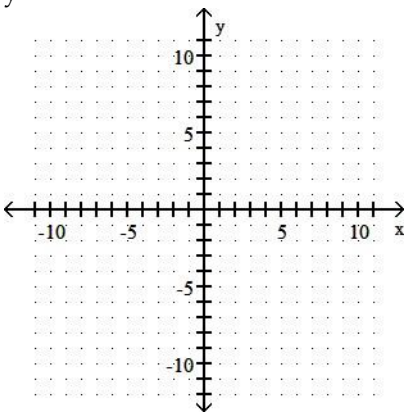


45) $y = x^3 - 2$

45) _____



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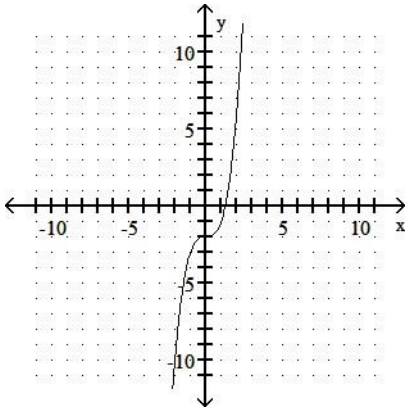

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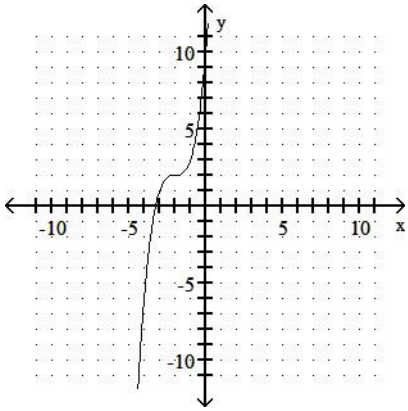

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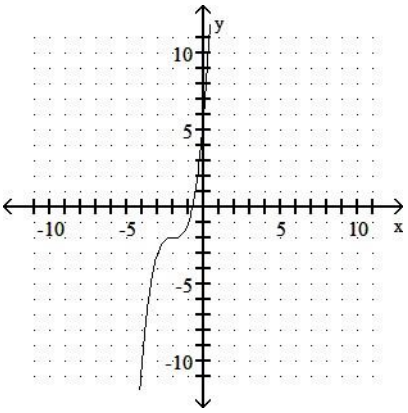

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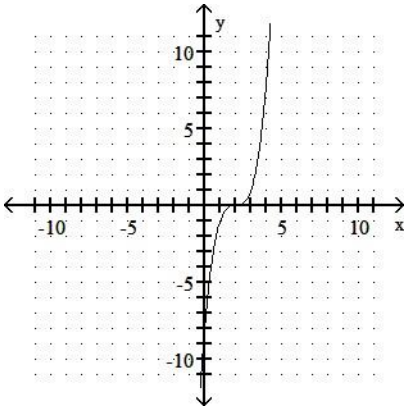
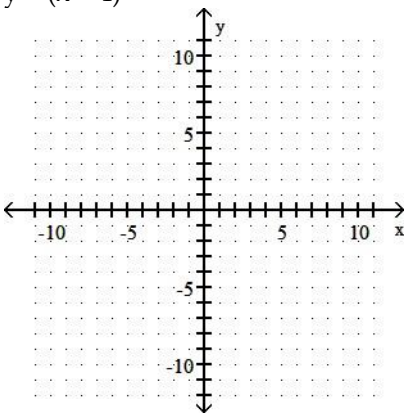


46) $y = (x + 4)^3$

46) _____



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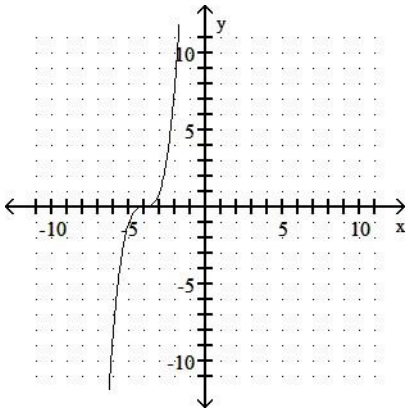

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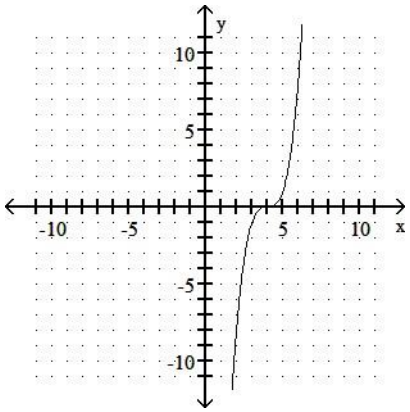

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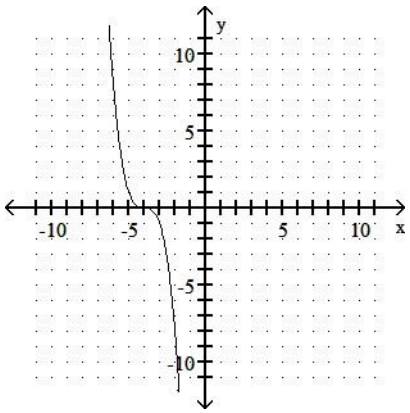

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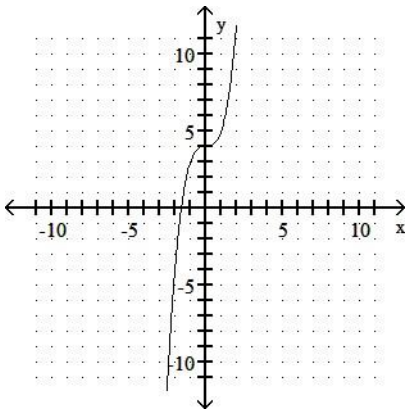


Provide an appropriate response.

47) If the point (a, b) is in the fourth quadrant, in what quadrant is (a, -b)? 47) _____

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

48) If the point (a, b) is in the fourth quadrant, in what quadrant is (-a, -b)? 48) _____

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

49) If the point (a, b) is in the fourth quadrant, in what quadrant is (b, a)? 49) _____

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

50) If a vertical line is drawn through the point (-5, -4), where will it intersect the x-axis? 50) _____

A) (0, -4) B) (-5, 0) C) (-4, 0) D) (0, -5)

51) If a horizontal line is drawn through the point (5, 6), where will it intersect the y-axis? 51) _____

A) (0, 6) B) (0, 5) C) (5, 0) D) (6, 0)

52) What is the midpoint of the segment joining (d, x) and (-5d, 7x)? 52) _____

A) (-3d, 4x) B) (-4d, 8x) C) (2d, 3x) D) (-2d, 4x)

53) What is the distance from the origin to the point (m, -n)? 53) _____

A) $\sqrt{m^2 - n^2}$ B) $\sqrt{m^2 + n^2}$ C) $\sqrt{m - n}$ D) $m^2 + n^2$

54) What is the distance from the point (c, z) to the point (m, q)? 54) _____

A) $\sqrt{(m - c)^2 - (q - z)^2}$ B) $\sqrt{(m - c)^2 + (q - z)^2}$

C) $[\sqrt{m - c} + \sqrt{q - z}\,]^2$ D) $\sqrt{(c - z)^2 + (m - q)^2}$

55) Are the points A(-3, 4), B(0, 7), C(2, -1), and D(5, 2) the vertices of a parallelogram (opposite sides equal in length)? of a rhombus (all sides equal in length)? 55) _____

A) no; yes B) no; no C) yes; no D) yes; yes

56) Are the points A(-3, 11), B(0, 8), C(2, 0), and D(5, 3) the vertices of a parallelogram (opposite sides equal in length)? of a rhombus (all sides equal in length)? 56) _____

A) no; yes B) yes; yes C) no; no D) yes; no

Find the center-radius form of the equation of the circle.

57) center (0, 0), radius 5 57) _____

A) $x^2 + y^2 = 25$ B) $x^2 + y^2 = 10$ C) $x^2 + y^2 = 5$ D) $x^2 + y^2 = \sqrt{5}$

58) center (9, 6), radius 11 58) _____

A) $(x + 6)^2 + (y + 9)^2 = 11$ B) $(x + 9)^2 + (y + 6)^2 = 121$

C) $(x - 9)^2 + (y - 6)^2 = 121$ D) $(x - 6)^2 + (y - 9)^2 = 11$

59) center (7, 0), radius 8 59) _____

A) $(x + 7)^2 + y^2 = 64$ B) $x^2 + (y + 7)^2 = 8$

C) $x^2 + (y - 7)^2 = 8$ D) $(x - 7)^2 + y^2 = 64$

60) center (0, 10), radius 8 60) _____

A) $x^2 + (y - 10)^2 = 64$ B) $(x + 10)^2 + y^2 = 64$

C) $(x - 10)^2 + y^2 = 64$ D) $x^2 + (y + 10)^2 = 8$

61) center (-9, -8), radius $\sqrt{14}$ 61) _____

A) $(x - 8)^2 + (y - 9)^2 = 196$

B) $(x + 9)^2 + (y + 8)^2 = 14$

C) $(x - 9)^2 + (y - 8)^2 = 14$

D) $(x + 8)^2 + (y + 9)^2 = 196$

62) center (0, -1), radius $\sqrt{3}$ 62) _____

A) $x^2 + (y + 1)^2 = 3$

B) $(x - 1)^2 + y^2 = 9$

C) $x^2 + (y - 1)^2 = 3$

D) $(x + 1)^2 + y^2 = 9$

63) center (-10, 0), radius $\sqrt{13}$ 63) _____

A) $x^2 + (y + 10)^2 = 169$

B) $(x + 10)^2 + y^2 = \sqrt{13}$

C) $(x - 10)^2 + y^2 = 13$

D) $(x + 10)^2 + y^2 = 13$

64) center $(-\sqrt{15}, -5)$, radius $\sqrt{15}$ 64) _____

A) $(x - \sqrt{15})^2 + (y - 5)^2 = 225$

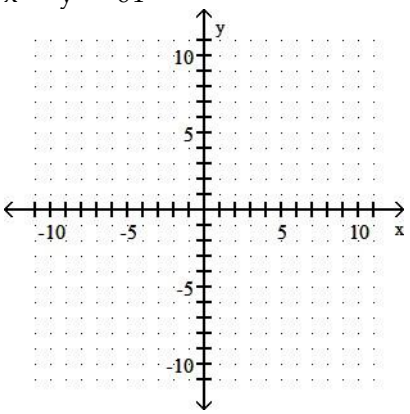
B) $(x + \sqrt{15})^2 + (y + 5)^2 = 15$

C) $(x + \sqrt{15})^2 + (y + 5)^2 = \sqrt{15}$

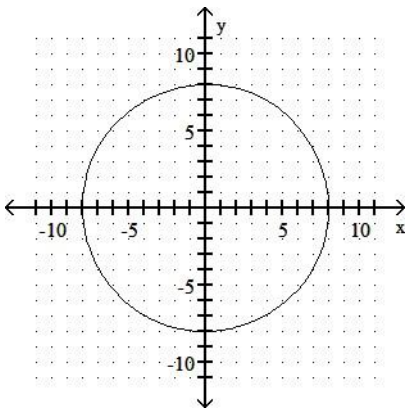
D) $(x - \sqrt{15})^2 + (y - 5)^2 = 15$

Graph the circle.

65) $x^2 + y^2 = 64$ 65) _____



A)



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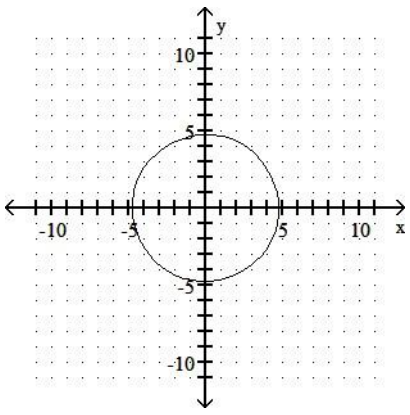

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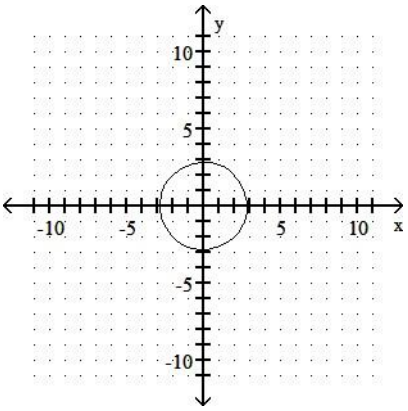

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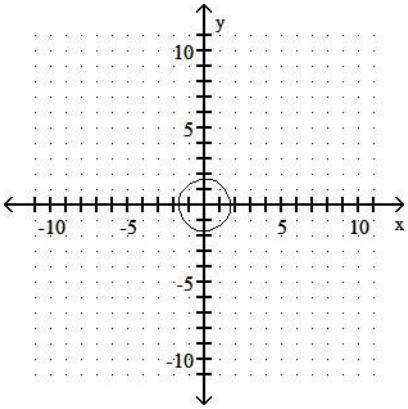
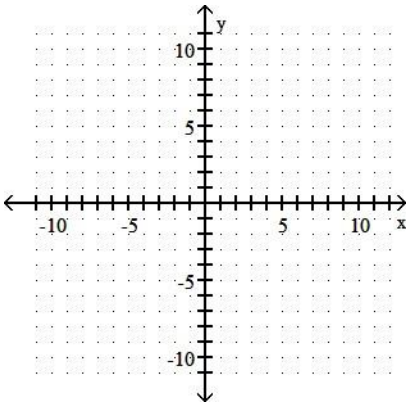
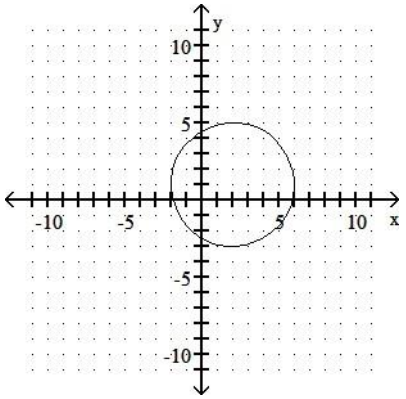


66) $(x - 2)^2 + (y + 1)^2 = 16$ 66) _____



A)



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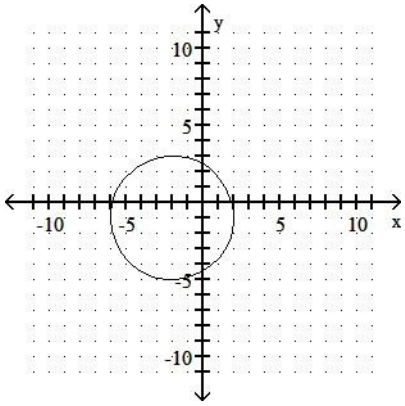

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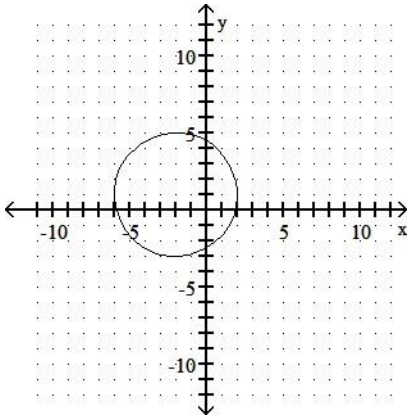
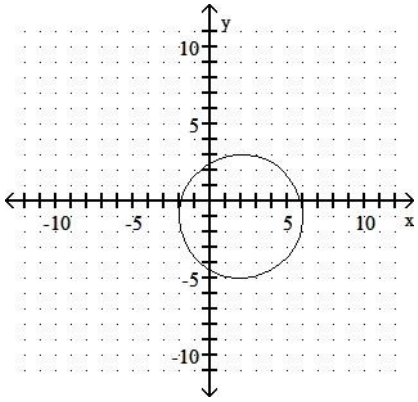
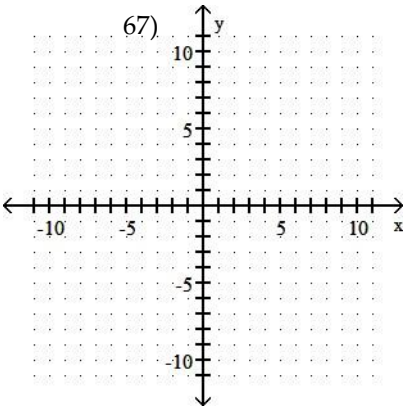


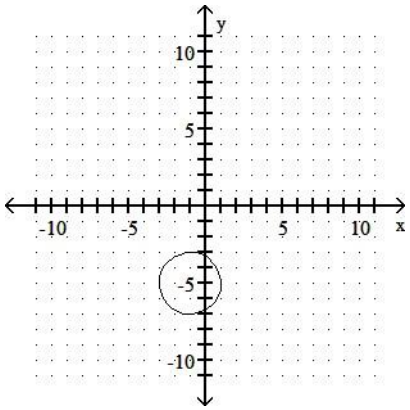
D)

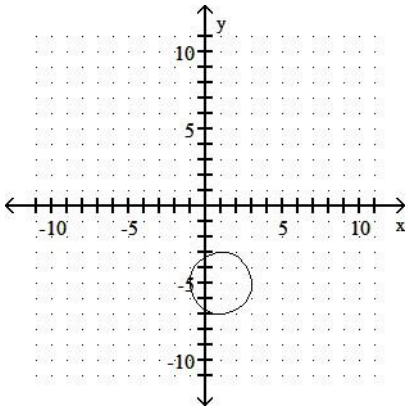


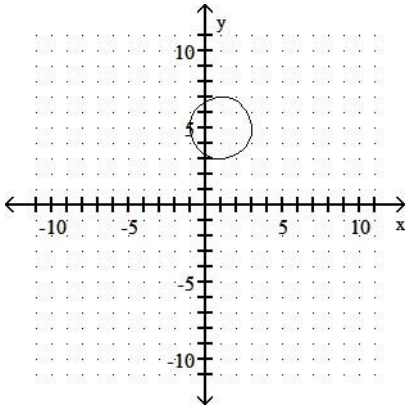
67) $(x - 1)^2 + (y - 5)^2 = 4$

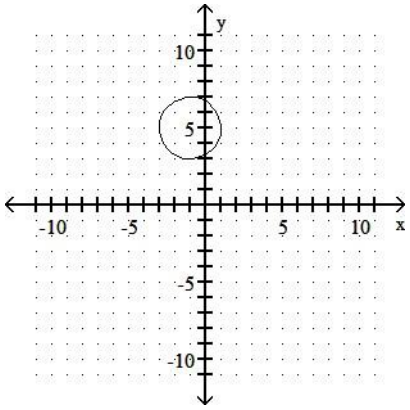
67) 

___
___

A) 

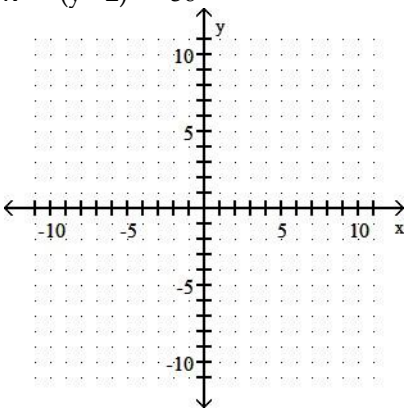
B) 

C) 

D) 

68) $x^2 + (y - 2)^2 = 36$

68) _____



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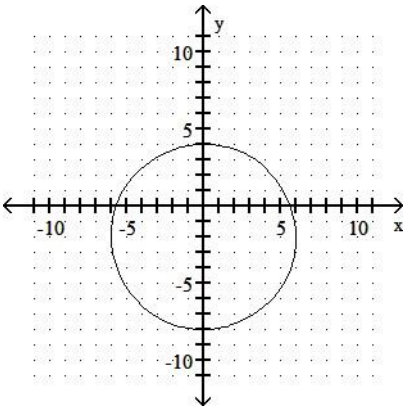

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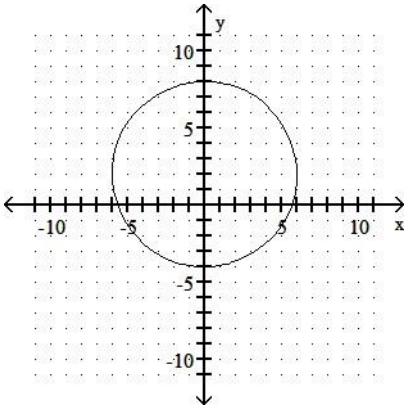
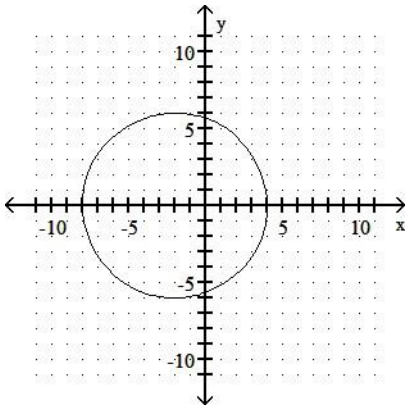
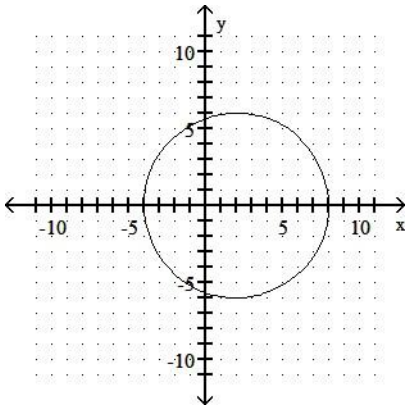


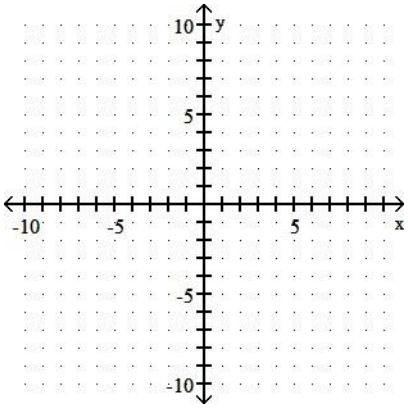
C)



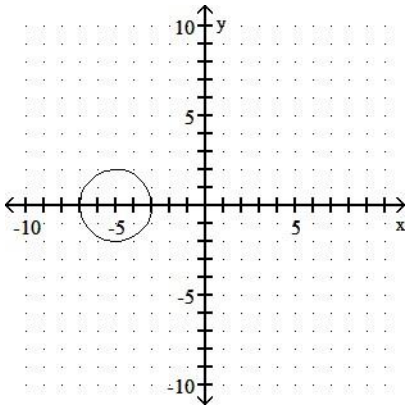
D)



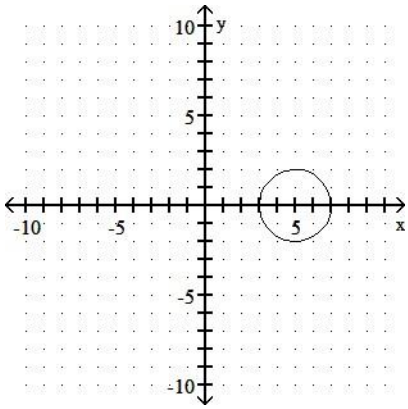
69) $(x - 5)^2 + y^2 = 4$ 69) _____



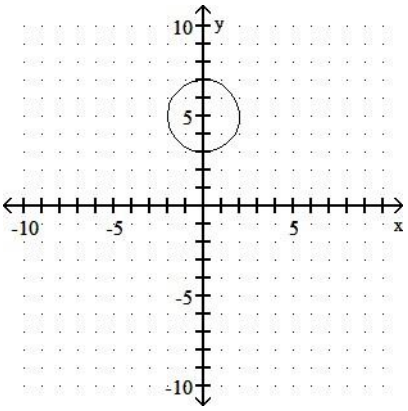
A)



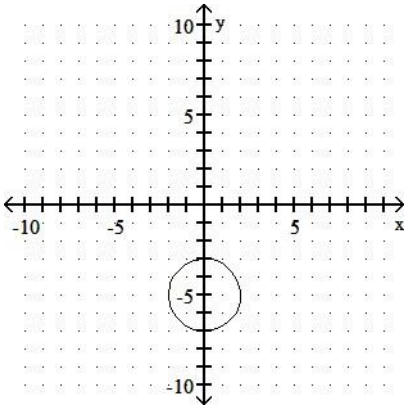
B)



C)

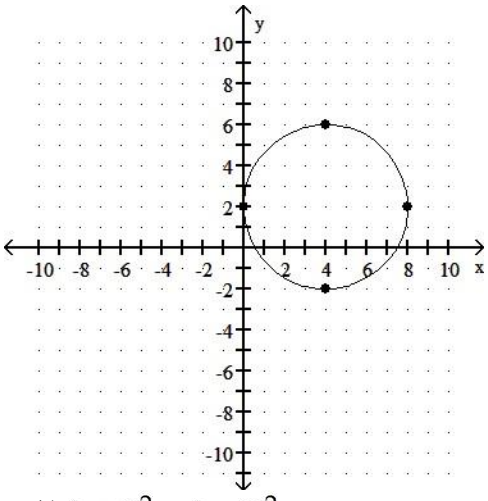


D)



Use the graph to determine the equation of the circle in center-radius form.

70) 70) _____



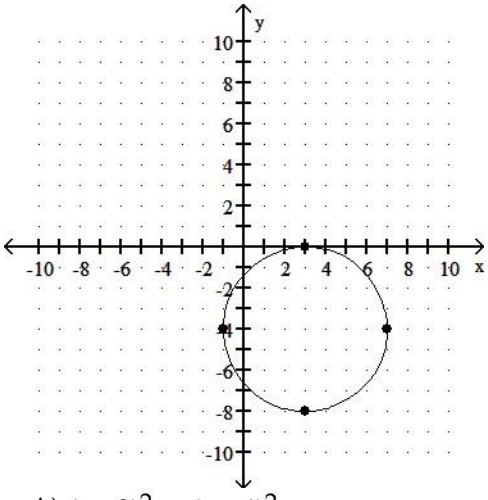
A) $(x + 4)^2 + (y + 2)^2 = 4$

B) $(x - 4)^2 + (y - 2)^2 = 16$

C) $(x - 4)^2 + (y - 2)^2 = 4$

D) $(x + 4)^2 + (y + 2)^2 = 16$

71) 71) _____



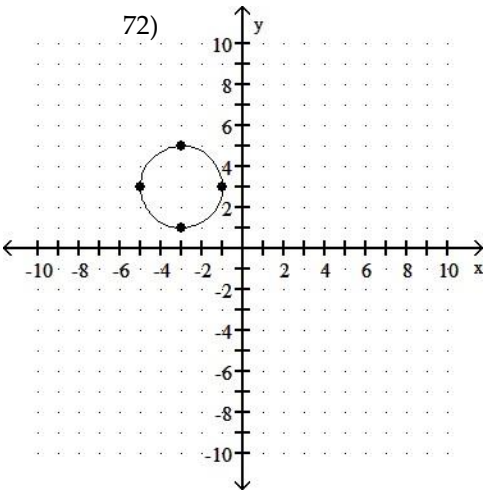
A) $(x - 3)^2 + (y + 4)^2 = 4$

B) $(x + 3)^2 + (y - 4)^2 = 16$

C) $(x + 3)^2 + (y - 4)^2 = 4$

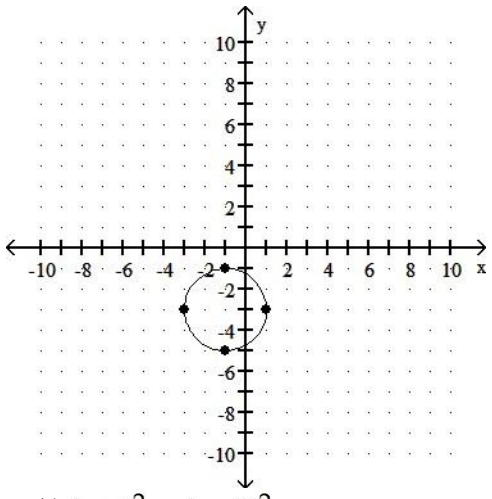
D) $(x - 3)^2 + (y + 4)^2 = 16$

72)

72) 

___
___

A) $(x + 3)^2 + (y - 3)^2 = 2$
B) $(x - 3)^2 + (y + 3)^2 = 2$
C) $(x - 3)^2 + (y + 3)^2 = 4$
D) $(x + 3)^2 + (y - 3)^2 = 4$

73) 

73) _____

A) $(x + 1^2 + (y + 3)^2 = 2$
B) $(x - 1)^2 + (y - 3)^2 = 2$
C) $(x + 1)^2 + (y + 3)^2 = 4$
D) $(x - 1)^2 + (y - 3)^2 = 4$

Decide whether or not the equation has a circle as its graph. If it does not, describe the graph.

74) $x^2 + y^2 - 16x - 4y + 64 = 0$ 74) _____

A) no; the graph is nonexistent
B) no; the graph is the point (-8, -2)
C) yes
D) no; the graph is the point (8, 2)

75) $x^2 + y^2 - 12x + 4y + 31 = 0$ 75) _____

A) yes
B) no; the graph is the point (-6, 2)
C) no; the graph is the point (6, -2)
D) no; the graph is nonexistent

76) $x^2 + y^2 + 8x - 10y + 41 = 0$ 76) _____

A) no; the graph is nonexistent
B) no; the graph is the point (-4, 5)
C) no; the graph is the point (4, -5)
D) yes

77) $x^2 + y^2 + 18x - 2y + 211 = 0$ 77) _____

A) no; the graph is the point (-9, 1)
B) no; the graph is nonexistent
C) no; the graph is the point (9, -1)
D) yes

78) $2x^2 + 2y^2 - 4x + 12y - 12 = 0$ 78) _____

A) no; the graph is the point (-1, 3)
B) no; the graph is nonexistent
C) no; the graph is the point (1, -3)
D) yes

Find the center and radius of the circle.

79) $x^2 + y^2 - 4x - 18y + 49 = 0$ 79) _____

A) center: (2, 9); radius: 6
B) center: (9, 2); radius: 6
C) center: (-9, -2); radius: 36
D) center: (-2, -9); radius: 36

80) $x^2 + y^2 - 8x - 10y + 16 = 0$ 80) _____

A) center: (5, 4); radius: 5
B) center: (-5, -4); radius: 25
C) center: (4, 5); radius: 5
D) center: (-4, -5); radius: 25

81) $x^2 + y^2 + 8x - 16y + 71 = 0$ 81) _____

A) center: (-4, 8); radius: 3
B) center: (-8, 4); radius: 9
C) center: (4, -8); radius: 9
D) center: (8, -4); radius: 3

82) $5x^2 + 5y^2 + 40x - 40y + 80 = 0$ 82) _____

A) center: (-4, 4), radius: 4
B) center: (-4, 4), radius: 16
C) center: (4, -4), radius: 4
D) center: (4, -4), radius: 16

Find the center-radius form of the circle described or graphed.

83) a circle having a diameter with endpoints (-1, -4) and (-1, 4) 83) _____

A) $x^2 + (y + 4)^2 = 1$
B) $(x + 1)^2 + y^2 = 16$
C) $(x + 4)^2 + y^2 = 1$
D) $(x + 1)^2 + y^2 = 4$

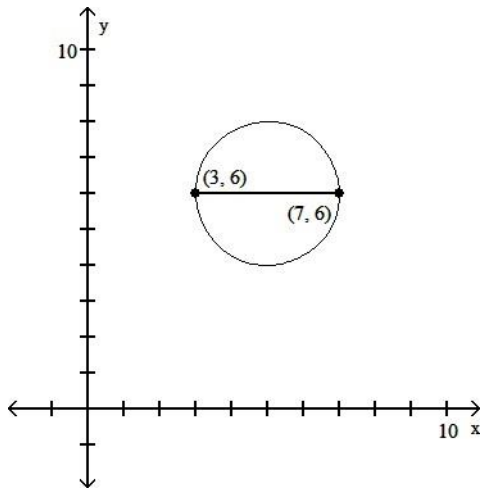
84) a circle having a diameter with endpoints (0, 4) and (10, 0) 84) _____

A) $(x - 5)^2 + y^2 = 4$
B) $(x - 5)^2 + (y - 2)^2 = 29$
C) $x^2 + (y - 2)^2 = 25$
D) $(x - 2)^2 + (y - 5)^2 = 29$

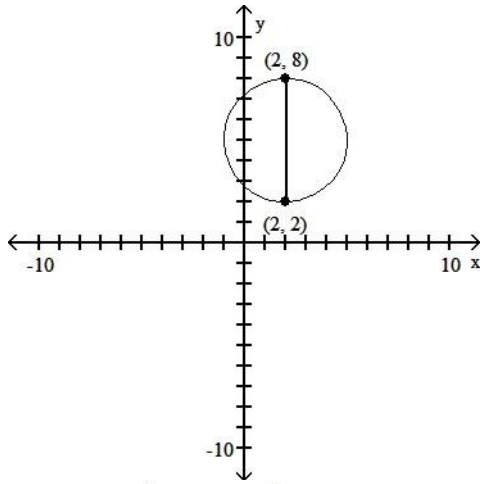
85) a circle having a diameter with endpoints (-6, -4) and (-8, 2) 85) _____

A) $(x - 7)^2 + (y + 1)^2 = 232$
B) $(x - 7)^2 + (y - 1)^2 = 200$
C) $(x - 1)^2 + (y + 3)^2 = 40$
D) $(x + 7)^2 + (y + 1)^2 = 10$

86) 86) _____



A) $(x + 5)^2 + (y + 6)^2 = 4$
B) $(x - 5)^2 + (y - 6)^2 = 2$
C) $(x - 5)^2 + (y - 6)^2 = 4$
D) $(x + 5)^2 + (y + 6)^2 = 2$

87) 

87) _____

A) $(x - 2)^2 + (y - 5)^2 = 3$
B) $(x + 2)^2 + (y + 5)^2 = 9$
C) $(x + 2)^2 + (y + 5)^2 = 3$
D) $(x - 2)^2 + (y - 5)^2 = 9$

Solve the problem.

88) Suppose that receiving stations X, Y, and Z are located on a coordinate plane at the points $(0, 9)$, $(-12, 17)$, and $(-8, -7)$ respectively. The epicenter of an earthquake is determined to be 5 units from X, 15 units from Y, and 13 units from Z. Where on the coordinate plane is the epicenter located? 88) _____
A) at (-2, 4) B) at (-3, 5) C) at (-2, 5) D) at (-4, 7)

89) The locations of three receiving stations and the distances to the epicenter of an earthquake are contained in the following three equations: $(x + 3)^2 + (y + 2)^2 = 9$, $(x + 8)^2 + (y + 5)^2 = 25$, $(x - 3)^2 + (y + 13)^2 = 100$. Determine the location of the epicenter. 89) _____
A) at (-4, -3) B) at (-2, -5) C) at (-2, -6) D) at (-3, -5)

90) Find the center-radius form of the equation of a circle with center (3, 8) and tangent to the x-axis. 90) _____
A) $(x - 3)^2 + (y - 8)^2 = 64$
B) $(x + 3)^2 + (y + 8)^2 = 9$
C) $(x - 3)^2 + (y - 8)^2 = 9$
D) $(x + 3)^2 + (y + 8)^2 = 64$

91) Find the equation of a circle with center at (-5, 3), passing through the point $(1, 11)$. Write it in center-radius form. 91) _____
A) $(x - 5)^2 + (y + 3)^2 = 10$
B) $(x + 5)^2 + (y - 3)^2 = 10$
C) $(x - 5)^2 + (y + 3)^2 = 100$
D) $(x + 5)^2 + (y - 3)^2 = 100$

92) Find all points (x, y) with x = y that are 5 units from (-1, 6). 92) _____
A) (2, 2) and (-3, -3)
B) (2, 2) and (3, 3)
C) (-2, -2) and (3, 3)
D) (-2, -2) and (-3, -3)

93) Find all values of y such that the distance between (2, y) and (-10, 3) is 13. 93) _____
A) 2, 8 B) -2, 8 C) -8, 2 D) -8, -2

94) A circle has a diameter with endpoints (-2, 1) and (10, 13). Find the coordinates of the center. 94) _____

A) (-8, -5) B) (8, 14) C) (4, 7) D) (22, 25)

95) A circle has a diameter with endpoints (-2, 1) and (4, 9). Find the radius. 95) _____

A) 5 B) $\sqrt{10}$ C) $\sqrt{5}$ D) 10

96) Find the center-radius form of the equation of the circle having a diameter with endpoints $(-5, 1)$ and $(3, 7)$. 96) _____

A) $(x + 3)^2 + (y - 7)^2 = 10$ B) $(x - 1)^2 + (y + 4)^2 = 5$

C) $(x - 3)^2 + (y + 7)^2 = 100$ D) $(x + 1)^2 + (y - 4)^2 = 25$

Decide whether the relation defines a function.

97) {(-3, -2), (3, 6), (4, 6), (7, -7), (10, -1)} 97) _____

A) Function B) Not a function

98) {(-5, 1), (-3, -6), (3, -3), (3, 5)} 98) _____

A) Function B) Not a function

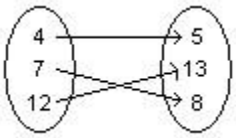
99) {(-8, 2), (-8, 8), (1, 4), (6, -4), (10, 2)} 99) _____

A) Function B) Not a function

100) {(-3, -4), (-1, 4), (4, -7), (7, 4)} 100) _____

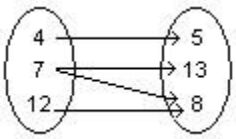
A) Not a function B) Function

101) 101) _____



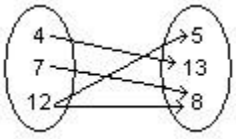
A) Not a function B) Function

102) 102) _____



A) Not a function B) Function

103) 103) _____



A) Function B) Not a function

104) Student Test Score 104) _____

Name	Test Score
Bob L.	76
Susan H.	83
Jim H.	76
Bruce B.	96

A) Not a function B) Function

105) Student Test Score

Name	Test Score
Bob L.	91
Susan H.	83
Jim H.	91
Bruce B.	96

105) _____

A) Function B) Not a function

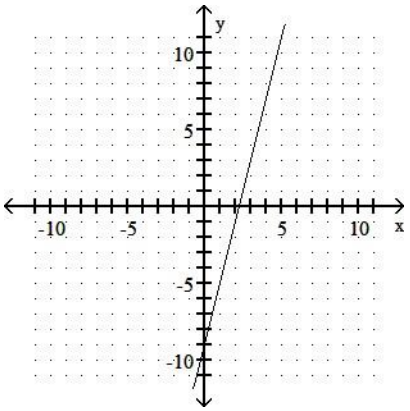
106) Annual New Telemarketing Companies

Year	Number
1995	28
1996	56
1997	131
1998	94
1999	234

106) _____

A) Function B) Not a function

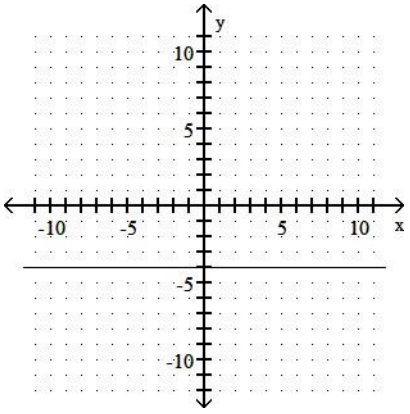
107)



107) _____

A) Function B) Not a function

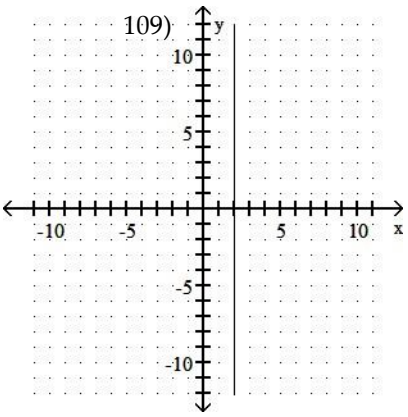
108)



108) _____

A) Function B) Not a function

109)

109) 

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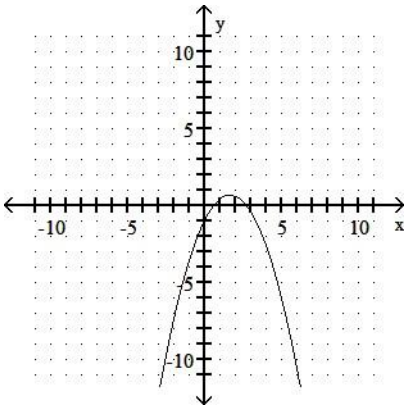
A) Not a function

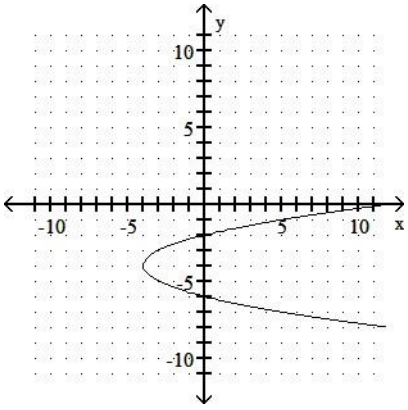
B) Function

110) 

110) _____

A) Not a function

B) Function

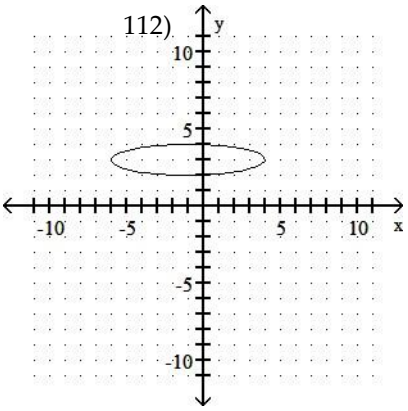
111) 

111) _____

A) Not a function

B) Function

112)

112) 

____
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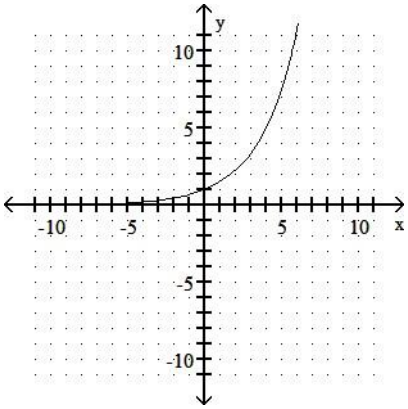
A) Function

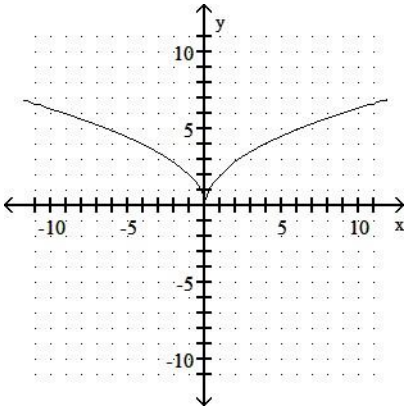
B) Not a function

113) 

113) _____

A) Not a function

B) Function

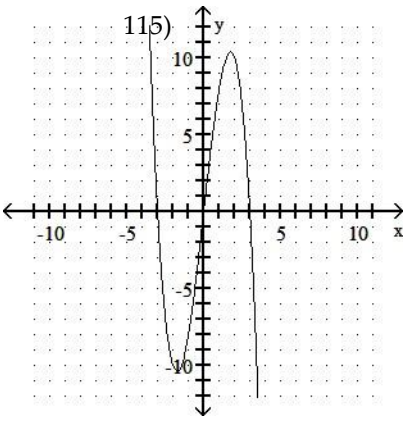
114) 

114) _____

A) Not a function

B) Function

115)

115) 

____
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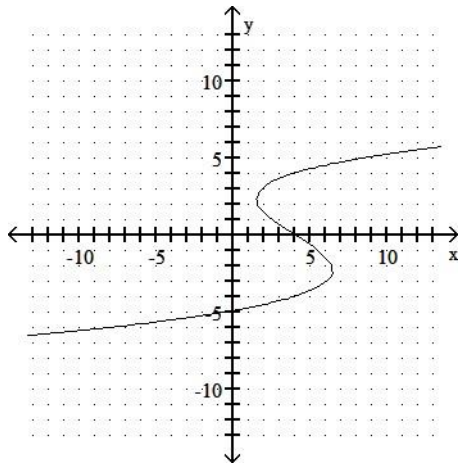
A) Function

B) Not a function

116) 116) _____



A) Not a function

B) Function

Give the domain and range of the relation.

117) {(2, 9), (-3, -8), (-6, -5), (5, 0)} 117) _____

A) domain: {2, 5, 9}; range: {-8, -6, -5, -3}

B) domain: {-6, -3, 2, 5}; range: {-8, -5, 0, 9}

C) domain: {-8, -5, 0, 9}; range: {-6, -3, 2, 5}

D) domain: {-8, -6, -5, -3}; range: {2, 5, 9}

118) {(1, 9), (-1, -9), (-7, -5), (6, -9)} 118) _____

A) domain: {1, 6, 9}; range: {-9, -7, -5, -1}

B) domain: {-9, -7, -5, -1}; range: {1, 6, 9}

C) domain: {-9, -5, 9}; range: {-7, -1, 1, 6}

D) domain: {-7, -1, 1, 6}; range: {-9, -5, 9}

119) {(1, 1), (-3, -3), (-7, -7), (4, 4)} 119) _____

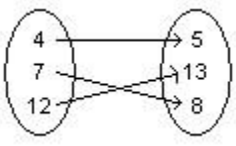
A) domain: {-7, -3}; range: {1, 4}

B) domain: {-7, -3, 1, 4}; range: {-7, -3, 1, 4}

C) None of these

D) domain: {1, 4}; range: {-7, -3}

120) 120) _____



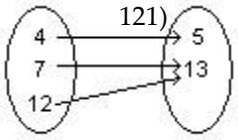
A) None of these

B) domain: {5, 8, 13}; range: {4, 7, 12}

C) domain: {4, 7, 12}; range: {5, 8, 13}

D) domain: {4, 5, 7}; range: {8, 12, 13}

121)

121) 

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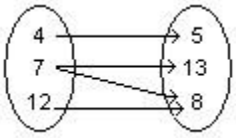
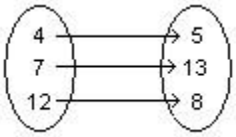
A) domain: {4, 5, 7}; range: {12, 13}
B) domain: {5, 13}; range: {4, 7, 12}
C) None of these
D) domain: {4, 7, 12}; range: {5, 13}

122) 

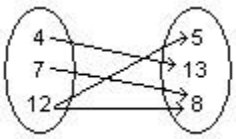
122) _____

A) domain: {4, 7, 12}; range: {5, 8, 13}
B) None of these
C) domain: {4, 12}; range: {5, 13}
D) domain: {5, 8, 13}; range: {4, 7, 12}

123) 

123) _____

A) domain: {4, 7, 12}; range: {5, 8, 13}
B) domain: {5, 8, 13}; range: {4, 7, 12}
C) None of these
D) domain: {4, 8, 12}; range: {5, 7, 13}

124) 

124) _____

A) None of these
B) domain: {5, 8, 13}; range: {4, 7, 12}
C) domain: {4, 8, 12}; range: {5, 7, 13}
D) domain: {4, 7, 12}; range: {5, 8, 13}

125) Annual New Telemarketing Companies
125) _____

Year	Number
1995	56
1996	112
1997	187
1998	178
1999	318

A) domain: {1995, 1996, 1997, 1998, 1999}; range: {56, 112, 178, 187, 318}
B) domain: {56, 112, 178, 187, 318}; range: {1995, 1996, 1997, 1998, 1999}
C) None of these
D) domain: {Year}; range: {Number}

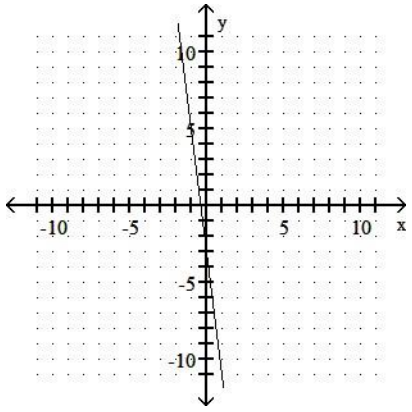
126) Annual New Telemarketing Companies
126) _____

Year	Number
1993	52
1994	102
1995	187
1996	170
1997	218

A) domain: {Year}; range: {Number}

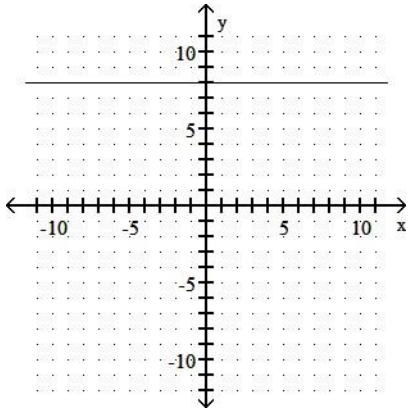
B) domain: {1993, 1994, 1995, 1996, 1997}; range: {52, 102, 170, 187, 218}
C) domain: {52, 102, 170, 187, 218}; range: {1993, 1994, 1995, 1996, 1997}
D) None of these

127) 127) _____



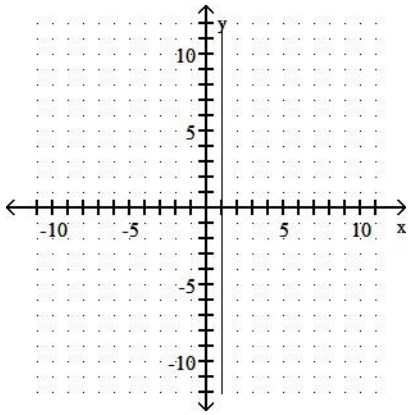
A) domain: (-∞, ∞); range: (-∞, ∞)
B) domain: (-∞, -3) ∪ (-3, ∞); range: (-∞, 0) ∪ (0, ∞)
C) domain: (-∞, 0) ∪ (0, ∞); range: (-∞, -3) ∪ (-3, ∞)
D) domain: (-∞, 0] ∪ [0, ∞); range: (-∞, -3] ∪ [-3, ∞)

128) 128) _____



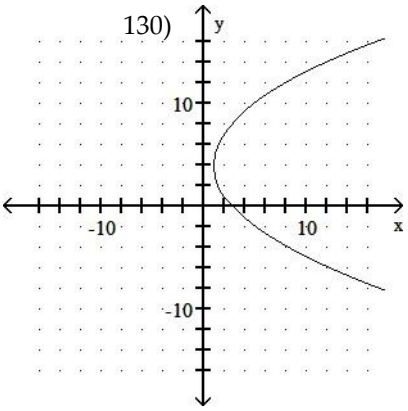
A) domain: (-∞, ∞); range: (-∞, ∞)
B) domain: (-∞, ∞); range: {8}
C) domain: (-∞, ∞); range: (-∞, 8) ∪ (8, ∞)
D) domain: {8}; range: (-∞, ∞)

129) 129) _____



A) domain: (-∞, ∞); range: (-∞, ∞)
B) domain: (-∞, 1) ∪ (1, ∞); range: (-∞, ∞)
C) domain: {1}; range: (-∞, ∞)
D) domain: (-∞, ∞); range: {1}

130)

130) 

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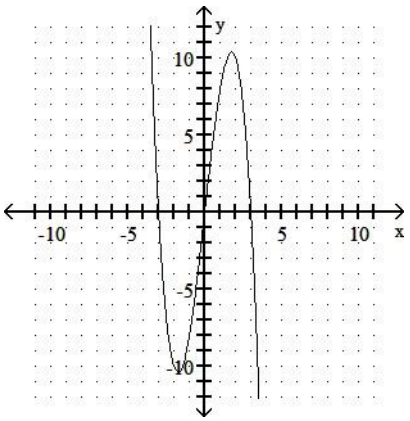
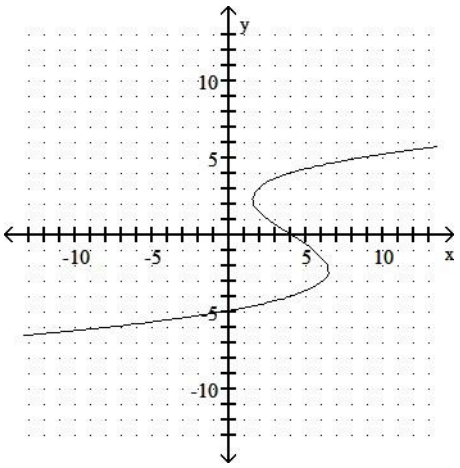
A) domain: (-∞, ∞); range: [1, ∞)
B) domain: (-∞, ∞); range: (-∞, ∞)
C) domain: (1, ∞); range: (4, ∞)
D) domain: [1, ∞); range: (-∞, ∞)

131) 

131) _____

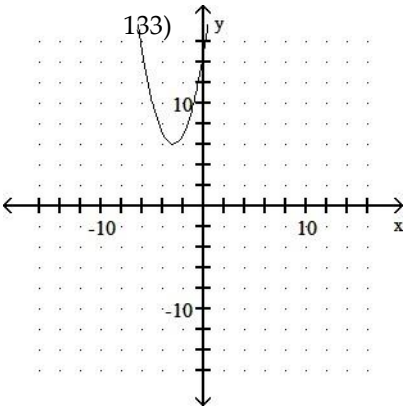
A) range: (-∞, -3) ∪ (-3, 0) ∪ (0, 3) ∪ (3, ∞); domain: (-∞, -10) ∪ (-10, 0) ∪ (0, 10) ∪ (10, ∞)
B) range: (-3, 3); domain: (-10, 10)
C) range: (-3, 0) ∪ (0, 3); domain: (-10, 0) ∪ (0, 10)
D) range: (-∞, ∞); domain: (-∞, ∞)

132) 

132) _____

A) range: (-∞, ∞); domain: (-∞, ∞)
B) range: (-∞, 0) ∪ (0, 4) ∪ (4, ∞); domain: (-∞, -5) ∪ (-5, 0) ∪ (0, ∞)
C) range: (-∞, 4) ∪ (4, ∞); domain: (-∞, -5) ∪ (-5, ∞)
D) None of these

133)

133) 

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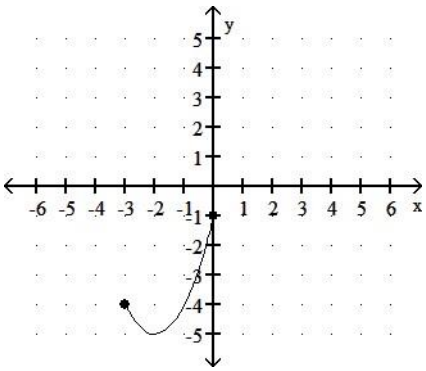
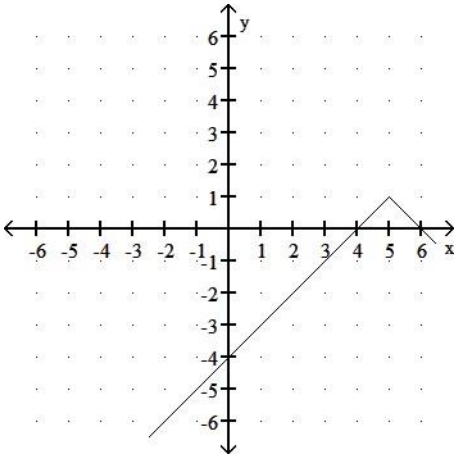
A) domain: (-∞, ∞); range: [6, ∞)
B) domain: (0, ∞); range: [3, ∞)
C) domain: (-∞, 0) ∪ (0, ∞); range: (-∞, 0) ∪ (0, ∞)
D) domain: (-∞, 0); range: (-∞, 0)

134) 

134) _____

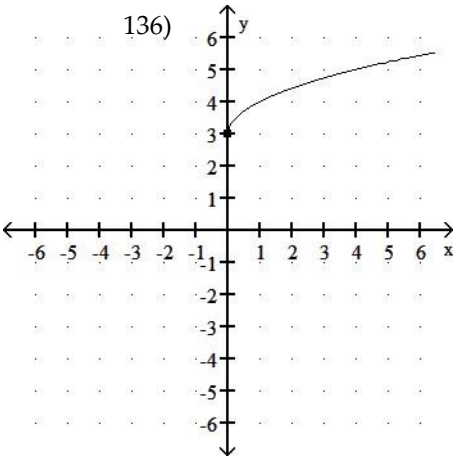
A) domain: [-3, 0]; range: [- 5, -1]
B) domain: (-∞, -1]; range: [0, 3]
C) domain: [- 5, -1]; range: [-3, 0]
D) domain: [0, 3]; range: (-∞, -1]

135) 

135) _____

A) domain: (-∞, 5) or (5, ∞); range: (-∞, 1) or (1, ∞)
B) domain: (-∞, ∞); range: (-∞, ∞)
C) domain: (-∞, 5]; range: (-∞, 1]
D) domain: (-∞, ∞); range: (-∞, 1]

136)

136) 

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A) domain: (-∞, ∞); range: [3, ∞)
B) domain: [0, ∞); range: [0, ∞)
C) domain: [0, ∞); range: [3, ∞)
D) domain: [0, ∞); range: (-∞, ∞)

Decide whether the relation defines a function.

137) $3x = 9 - 4y$ 137) _____
A) Not a function
B) Function

138) $y = 5x - 2$ 138) _____
A) Not a function
B) Function

139) $y = x3$ 139) _____
A) Function
B) Not a function

140) $y2 = 5x$ 140) _____
A) Function
B) Not a function

141) $y = \sqrt{5x - 6}$ 141) _____
A) Function
B) Not a function

142) $10x - 2y > -9$ 142) _____
A) Not a function
B) Function

143) $x = y6$ 143) _____
A) Not a function
B) Function

144) $y = x2$ 144) _____
A) Function
B) Not a function

145) $xy = -3$ 145) _____
A) Function
B) Not a function

146) $y = \frac{5}{x - 1}$ 146) _____
A) Function
B) Not a function

Give the domain and range of the relation.

147) $y = x2 + 8$ 147) _____
A) domain: (-∞, ∞); range: [8, ∞)
B) domain: (-∞,∞); range: (-8, ∞)

C) domain: (8, ∞); range: (-∞, ∞)

D) domain: (-8, ∞); range: (-∞, ∞)

148) $y = (x + 4)^2 - 4$ 148) _____

A) domain: (4, ∞); range: (-∞, ∞)

B) domain: (-∞, ∞); range: [-4, ∞)

C) domain: (-∞, -4); range: (-∞, ∞)

D) domain: (-∞, ∞); range: (-∞, -4)

149) $y = 2x + 11$ 149) _____

A) domain: (-∞, ∞); range: [11, ∞)

B) domain: (-∞, ∞); range: (-∞, ∞)

C) domain: [0, ∞); range: (-∞, ∞)

D) domain: (-∞, ∞); range: [0, ∞)

150) $y = 3x7$ 150) _____

A) domain: (-∞, ∞); range: [3, ∞)

B) domain: (-∞, ∞); range: [0, ∞)

C) domain: (-∞, ∞); range: [-3, ∞)

D) domain: (-∞, ∞); range: (-∞, ∞)

151) $x = y4$ 151) _____

A) domain: (-∞, ∞); range: [0, ∞)

B) domain: [0, ∞); range: (-∞, ∞)

C) domain: (-∞, ∞); range: (-∞, ∞)

D) domain: [0, ∞); range: [0, ∞)

152) $xy = 8$ 152) _____

A) domain: (-∞, 0) ∪ (0, ∞); range: (-∞, 0) ∪ (0, ∞)

B) domain: [0, ∞); range: (-∞, ∞)

C) domain: (-∞, ∞); range: (-∞, ∞)

D) domain: (-∞, 0) ∪ (0, ∞); range: [0, ∞)

153) $y = \sqrt{2 + x}$ 153) _____

A) domain: (-∞, ∞); range: (-∞, ∞)

B) domain: [0, ∞); range: (-∞, ∞)

C) domain: [-2, ∞); range: [0, ∞)

D) domain: (-∞, ∞); range: [-2, ∞)

154) $y = \sqrt{4x - 5}$ 154) _____

A) domain: $\left[\frac{5}{4}, \infty\right)$; range: [0, ∞)

B) domain: (-∞, ∞); range: $\left[\frac{5}{4}, \infty\right)$

C) domain: $\left(\frac{5}{4}, \infty\right)$; range: [0, ∞)

D) domain: $\left[\frac{5}{4}, \infty\right)$; range: (-∞, ∞)

155) $y = \frac{17}{17 - x}$ 155) _____

A) domain: (-∞, ∞); range: (-∞, 0) ∪ (0, ∞)

B) domain: (-∞, ∞); range: (-∞, ∞)

C) domain: (-∞, 17) ∪ (17, ∞); range: (-∞, ∞)

D) domain: (-∞, 17) ∪ (17, ∞); range: (-∞, 0) ∪ (0, ∞)

156) $y = \frac{-7}{x - 6}$ 156) _____

A) domain: (-∞, -6) ∪ (6, ∞); range: (-∞, ∞)

B) domain: (-∞, 6) ∪ (6, ∞); range: (-∞, 0) ∪ (0, ∞)

C) domain: (-∞, 6) ∪ (6, ∞); range: (-∞, ∞)

D) domain: (-∞, -6) ∪ (-6, ∞); range: (-∞, 0) ∪ (0, ∞)

Evaluate the function.

157) Find f(-2) when f(x) = -5x + 3 157) _____

A) 7 B) -2 C) 13 D) 4

158) Find f(-1) when $f(x) = x^2 - 2x - 7$ 158) _____

A) 6 B) -8 C) -4 D) 10

159) Find f(0) when $f(x) = x^2 + 3x - 5$ 159) _____

A) -5 B) 0 C) 5 D) 25

160) Find f(-3) when $f(x) = 2x^2 + 3x + 5$ 160) _____

A) 14 B) 5 C) 32 D) 4

161) Find $f\left(\frac{1}{4}\right)$ when $f(x) = 2^{x^2} + 9x - 7$ 161) _____

A) $-\frac{37}{8}$ B) $\frac{37}{8}$ C) $-\frac{1}{4}$ D) $\frac{1}{4}$

162) Find g(a + 1) when $g(x) = \frac{1}{5}x + 5$. 162) _____

A) $\frac{1}{5}a - 5$ B) $\frac{1}{5}a + 5$ C) $\frac{a + 26}{5}$ D) $\frac{a - 26}{5}$

163) Find g(a - 1) when g(x) = 2x - 5. 163) _____

A) 2a - 5 B) 2a - 7 C) $\frac{1}{2}a - 5$ D) 2a + 1

164) Find f(k) when $f(x) = 3x^2 + 4x + 5$ 164) _____

A) $3k^2 + 16k + 5$ B) $3k^2 + 4k + 5$ C) $9k^2 + 16k + 25$ D) $3k^2 + 4k + 25$

165) Find f(-x) when $f(x) = 3^{x^2} - 5x + 4$ 165) _____

A) $3^{x^2} + 5x + 4$ B) $3^{x^2} + 5x - 4$ C) $-3^{x^2} + 5x + 4$ D) $-3^{x^2} + 5x - 4$

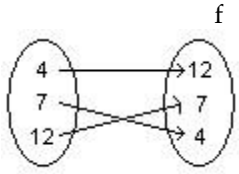
166) Find f(k - 1) when $f(x) = 4x^2 - 3x + 4$ 166) _____

A) $4k^2 - 11k + 11$ B) $-11k^2 + 4k + 11$ C) $4k^2 + 13k + 5$ D) $4k^2 - 11k + 5$

167) Find f(3) if f = {(-2, 3), (3, 0), (0, 5), (5, -2)} 167) _____

A) None of these B) (0, -2) C) 0 D) -2

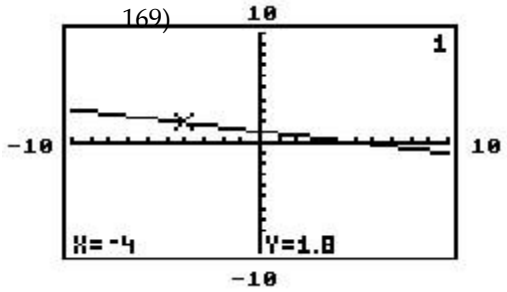
168) Find f(12) 168) _____



A) 4 B) 7 C) (7, 4) D) None of these

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

169)

169) 

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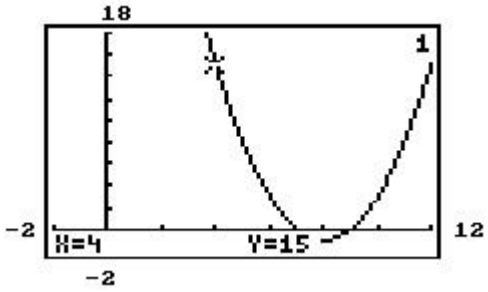
Find
f(-4).

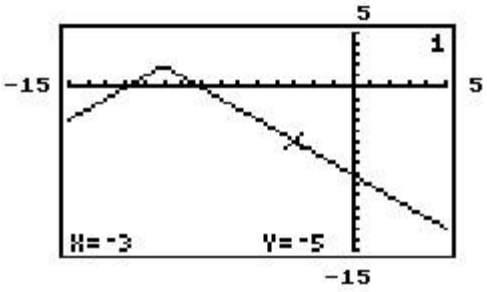
A) 1 B) 1.8 C) None of these D) -4

170) 

170) _____

Find f(4).

A) 15 B) None of these C) -1 D) 4

171) 

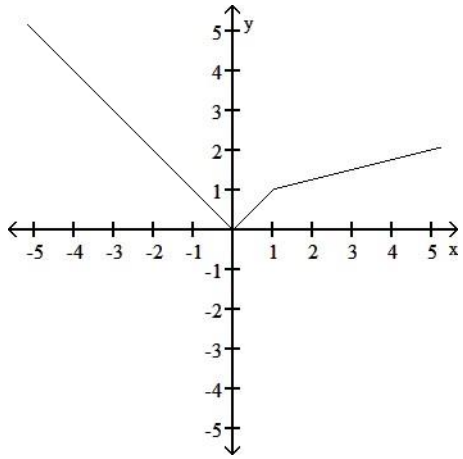
171) _____

Find f(-3).

A) 2 B) -5 C) -3 D) None of these

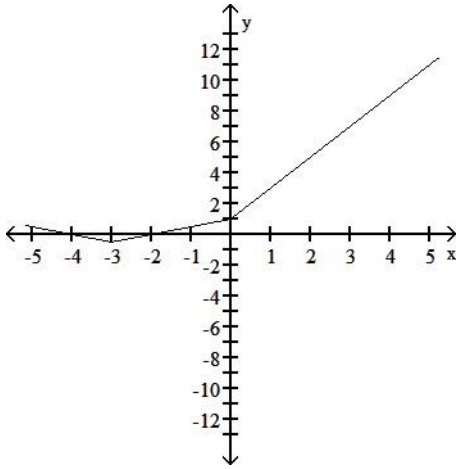
172) Find f(-2).

172) _____



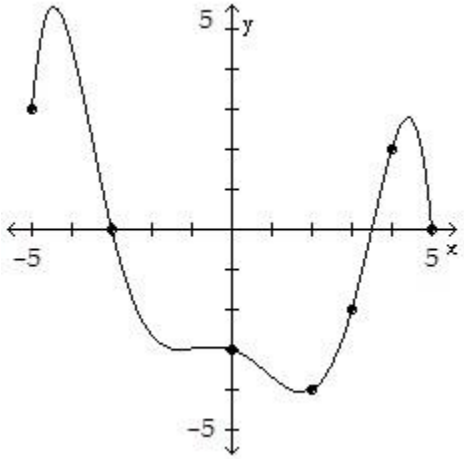
A) 5 B) 1.25 C) -2 D) 2

173) Find f(5). 173) _____



A) 9 B) -11 C) 2 D) 11

174) Find f(-3). 174) _____



A) 0 B) -2 C) 5 D) -3

An equation that defines y as a function of x is given. Solve for y in terms of x, and replace y with the function notation f(x).

175) x - 2y = 14 175) _____

A) $f(x) = -\frac{1}{2}x + 7$ B) $f(x) = \frac{1}{2}x - 7$ C) $f(x) = \frac{1}{2}x - 14$ D) f(x) = -x + 7

176) x + 7y = 7 176) _____

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

177) $y - 4x^2 = 7 - x$ 177) _____

A) $f(x) = 4x^2 - x + 7$ B) $f(x) = 4x^2 + x + 7$

C) $f(x) = -4x^2 + x - 7$ D) $f(x) = -4x^2 - x + 7$

178) 9x + 5y = 8 178) _____

A) f(x) =

$\frac{9}{5}x + \frac{8}{5}$

B) $f(x) = -\frac{9}{5}x + \frac{8}{5}$

C) $f(x) = \frac{9}{5}x - \frac{8}{5}$

D) $f(x) = 9x - 8$

179) $5x - 2y = 3$ 179) _____

A) $f(x) = \frac{5}{2}x - \frac{3}{2}$

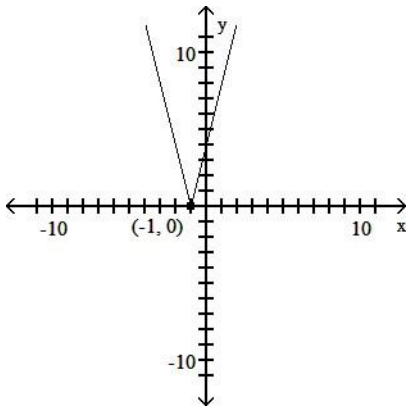
B) $f(x) = 5x - 3$

C) $f(x) = \frac{2}{5}x + \frac{3}{5}$

D) $f(x) = \frac{5}{2}x + \frac{3}{2}$

Determine the intervals of the domain for which the function is increasing, decreasing, and constant.

180) 180) _____



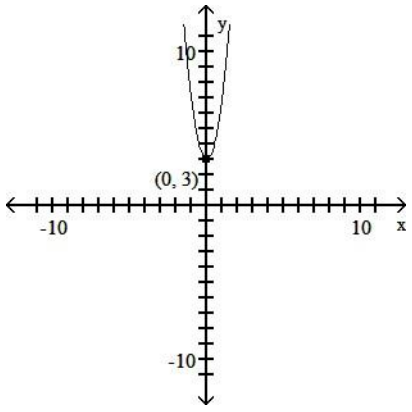
A) Increasing [1, ∞); Decreasing (-∞, 1]

B) Increasing (-∞, -1]; Decreasing [-1, ∞)

C) Increasing (-∞, 1]; Decreasing [1, ∞)

D) Increasing [-1, ∞); Decreasing (-∞, -1]

181) 181) _____



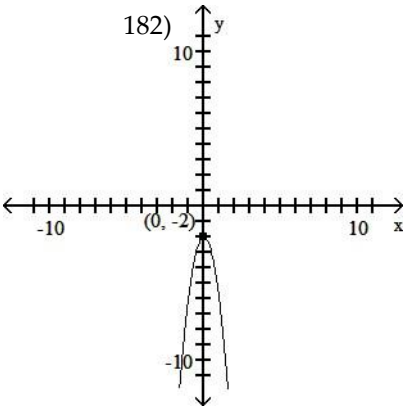
A) Increasing (-∞, 0]; Decreasing [0, -∞)

B) Increasing [0, ∞); Decreasing (-∞, 0]

C) Increasing (-∞, 0]; Decreasing (-∞, 0]

D) Increasing (-∞, 0]; Decreasing [0, ∞)

182)

182) 

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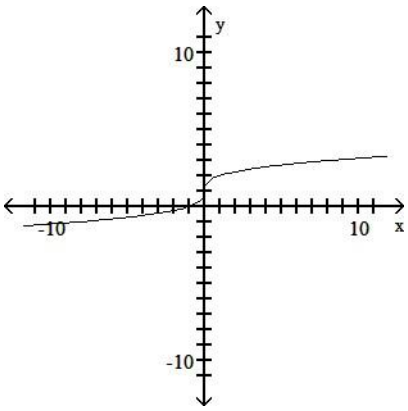
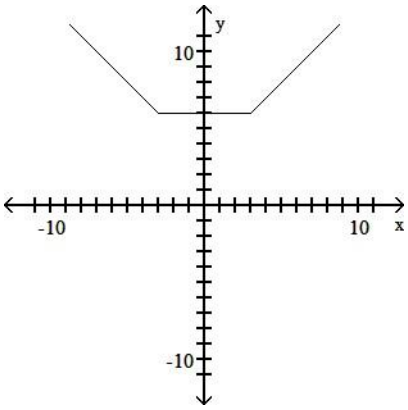
A) Increasing (-∞, 0]; Decreasing [0, -∞)
B) Increasing [0, ∞); Decreasing (-∞, 0]
C) Increasing (-∞, 0]; Decreasing (-∞, 0]
D) Increasing (-∞, 0]; Decreasing [0, ∞)

183) 

183) _____

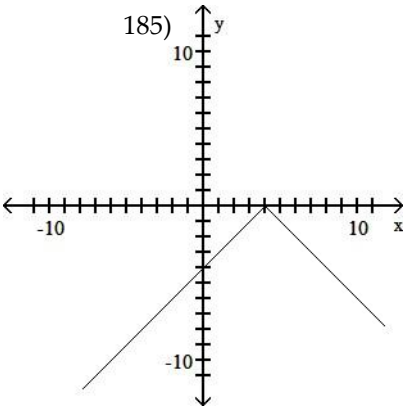
A) Increasing [0, ∞); Decreasing (-∞, 0]
B) Increasing (-∞, 0]; Decreasing [0, ∞)
C) Increasing for all reals; Decreasing never
D) Increasing never; Decreasing for all reals

184) 

184) _____

A) Increasing [3, ∞); Decreasing [-3, ∞); Constant (-3, 3)
B) Increasing (-∞, 3]; Decreasing(-∞, -3]; Constant (-3, 3)
C) Increasing [3, ∞); Decreasing (-∞, -3]; Constant [-3, 3]
D) Increasing (-∞, 3]; Decreasing [-3, ∞); Constant [-3, 3]

185)

185) 

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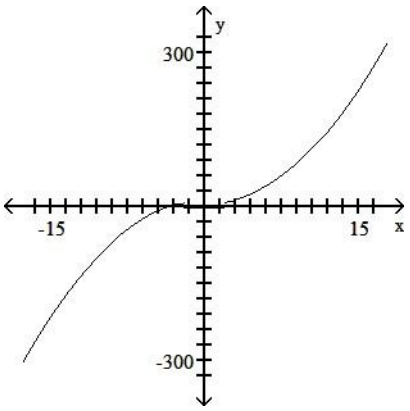
A) Increasing [4, ∞); Decreasing (-∞, 4]
B) Increasing (-∞, 4]; Decreasing (-∞, 4]
C) Increasing (-∞, 4]; Decreasing [4, ∞)
D) Increasing [4, ∞); Decreasing [4 ∞)

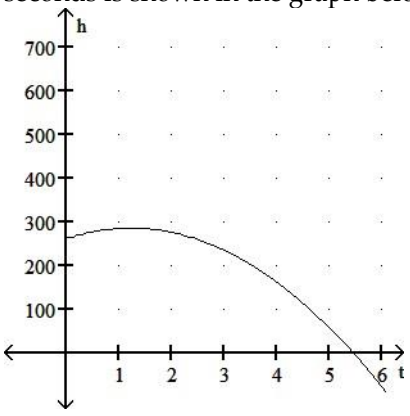
186) 

186) _____

A) Increasing (-2, 2); Decreasing (-∞, -2) ∪ (2, ∞)
B) Increasing (-∞, -2) ∪ (2, ∞); Decreasing never
C) Increasing (2, ∞); Decreasing (-∞, -2)
D) Increasing never; Decreasing (-∞, -2) ∪ (2, ∞)

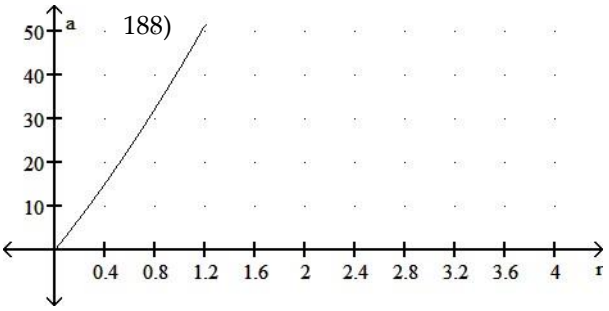
Use the graph to solve the problem.

187) The height h in feet of a projectile thrown upward from the roof of a building after time t seconds is shown in the graph below. How high will the projectile be after 2.2 s? 187) _____



A) 300 ft
B) 325 ft
C) 275 ft
D) 250 ft

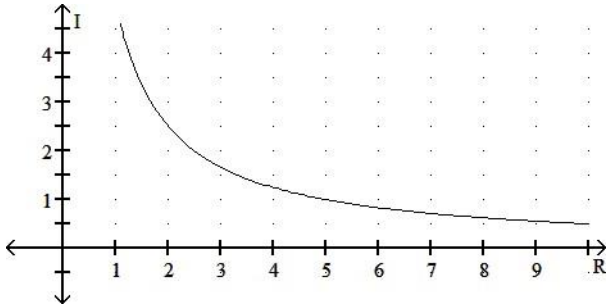
188) The surface area a of a cylinder is shown in the graph below. What is the radius r if the surface area is $5\ m^2$?

188) 

____
_

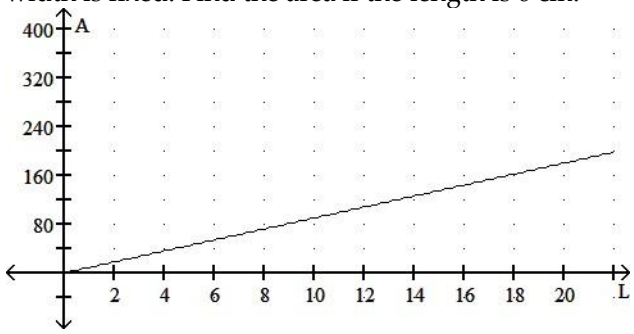
A) -0.2 m B) 0.4 m C) 0.2 m D) 0.0 m

189) The graph shows the relationship between current I and resistance R if the voltage is fixed. Find the current if the resistance is 1.1Ω. 189) _____



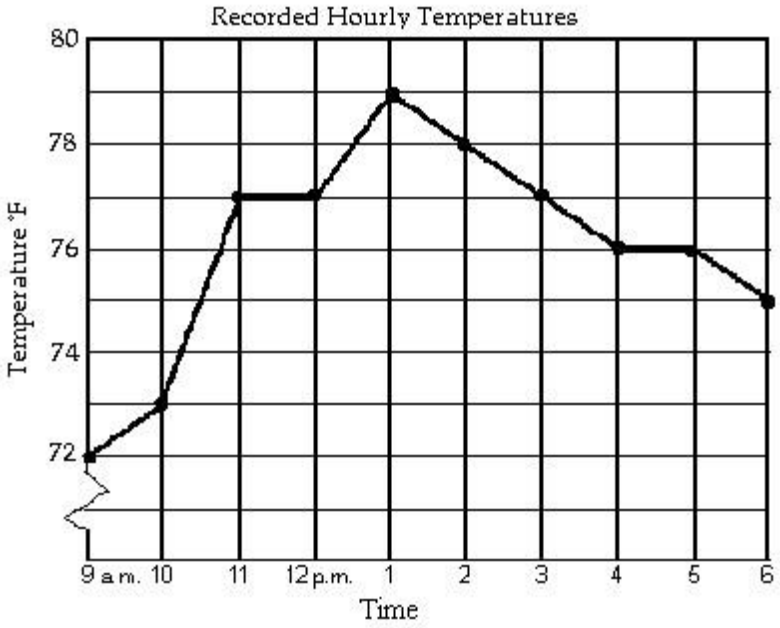
A) 4.6 A B) 4.2 A C) 4.4 A D) 4.8 A

190) The graph shows the relationship between the area A of a rectangle and the length L, if the width is fixed. Find the area if the length is 6 cm. 190) _____



A) 36 cm^2 B) 18 cm^2 C) 54 cm^2 D) 27 cm^2

The line graph shows the recorded hourly temperatures in degrees Fahrenheit at an airport.



191) At what time was the temperature the highest? 191) _____

A) 11 a.m. B) 5 p.m. C) 2 p.m. D) 1 p.m.

192) At what time was the temperature its lowest? 192) _____

A) 6 p.m. B) 9 a.m. C) 1 p.m. D) 4 p.m.

193) What temperature was recorded at 1 p.m.? 193) _____

A) 77 ° F B) 79 ° F C) 81 ° F D) 80 ° F

194) During which hour did the temperature increase the most? 194) _____

A) 9 a.m. to 10 a.m. B) 12 p.m. to 1 p.m.

C) 1 p.m. to 2 p.m. D) 10 a.m. to 11 a.m.

195) At what time was the temperature 73°? 195) _____

A) 10 a.m. B) 10 a.m. and 11 a.m.

C) 4 p.m. and 5 p.m. D) 5 p.m.

196) During which two hour period did the temperature increase the most? 196) _____

A) 12 p.m. to 2 p.m. B) 10 a.m. to 12 p.m.

C) 10 a.m. to 11 a.m. D) 9 a.m. to 11 a.m.

197) At what times was the temperature higher than 77°F? 197) _____

A) from 12 p.m. until 3 p.m. B) after 12 p.m.

C) from 12 p.m. until 1 p.m. D) from 11 a.m. until 3 p.m.

198) At what times was the temperature below 77°F? 198) _____

A) from 12 p.m. until 3 p.m

B) after 3 p.m.

C) from 9 a.m. until 11 a.m. and from 3 p.m. until 6 p.m.

D) from 9 a.m. until 12 p.m. and from 3 p.m. until 6 p.m.

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

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

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

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

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