

Test Bank for College Algebra 3rd Edition by Ratti and Waters ISBN
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Test Bank:

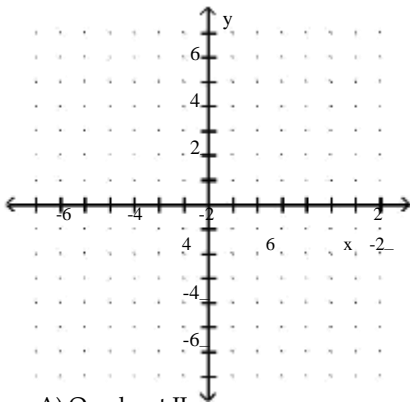
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Solution Manual:

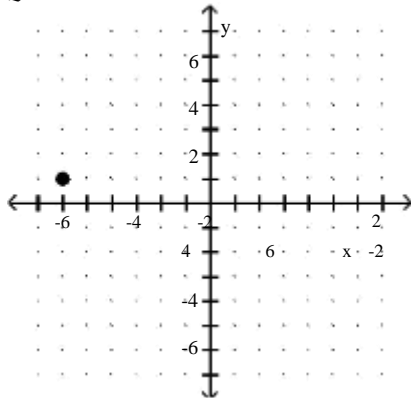
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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

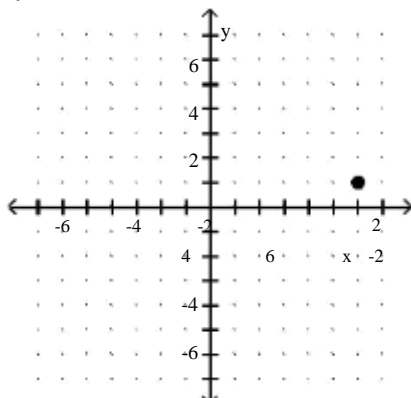
Plot the point and state the quadrant, if any, in which the point is located. 1) (6, 1)



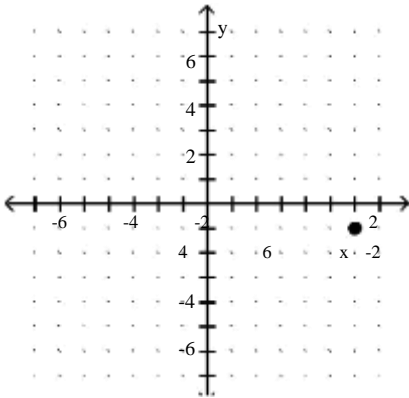
A) Quadrant II-



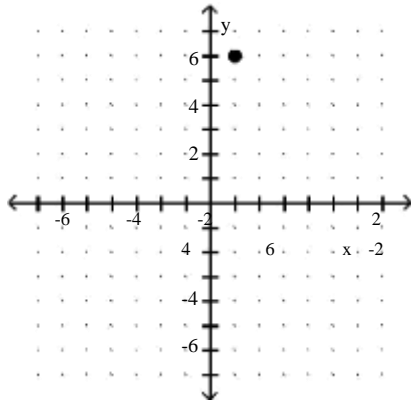
B) Quadrant I



C) Quadrant IV

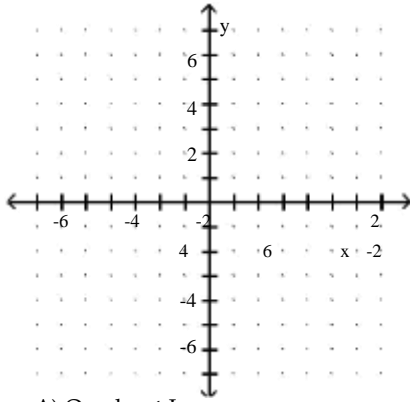


D) Quadrant I

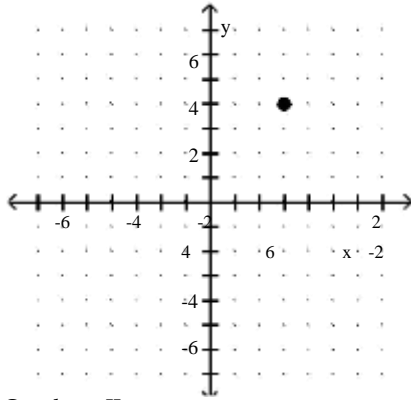


Answer: B

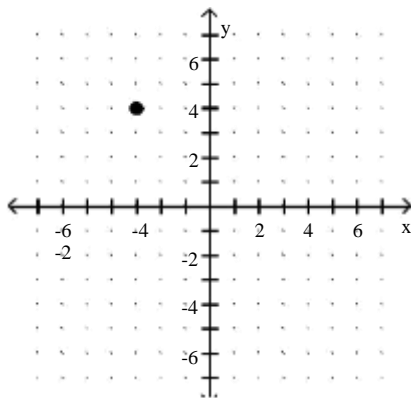
2) (-3, 4)



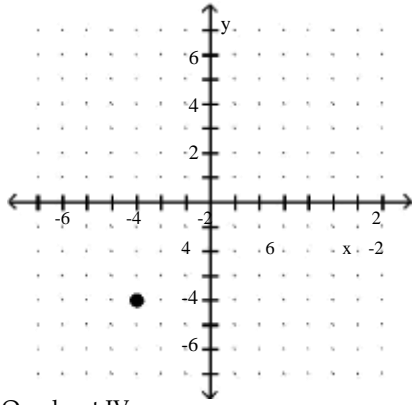
A) Quadrant I



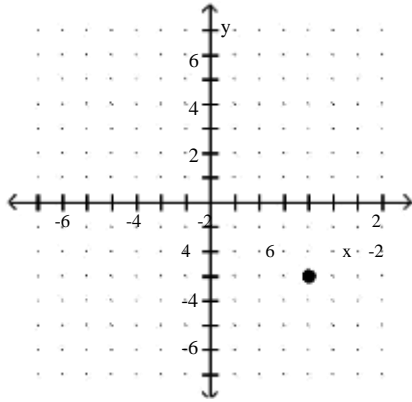
B) Quadrant II



C) Quadrant III

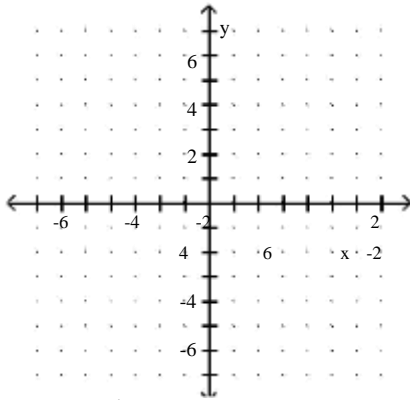


D) Quadrant IV

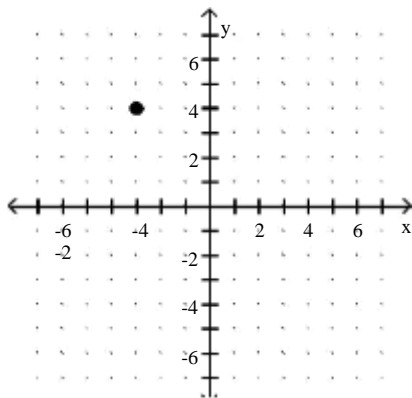


Answer: B

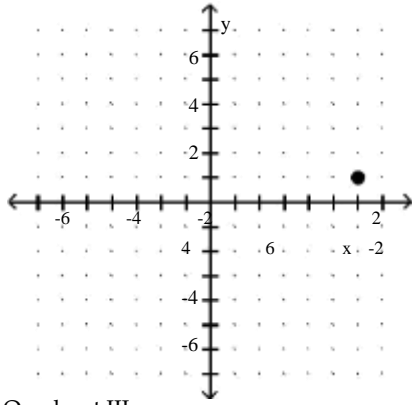
3) (6, -1)



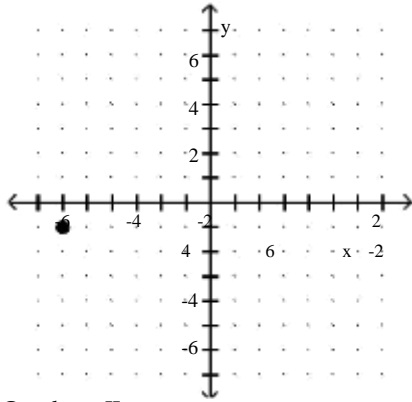
A) Quadrant IV



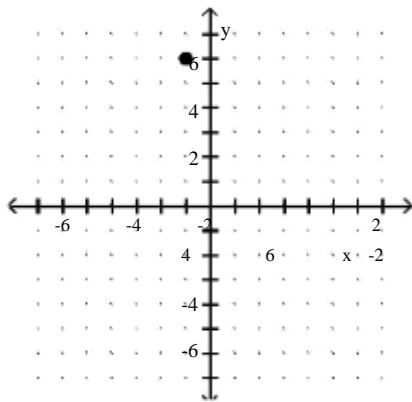
B) Quadrant I



C) Quadrant III

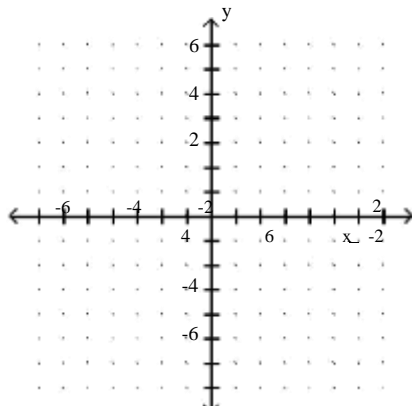


D) Quadrant II

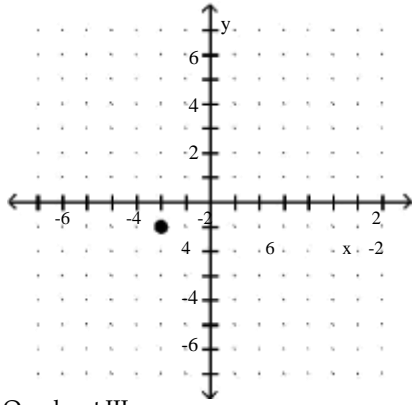


Answer: A

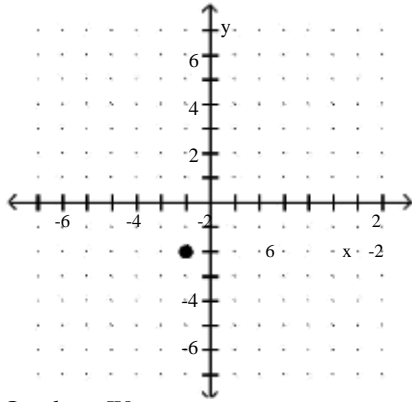
4) (-1, -2)



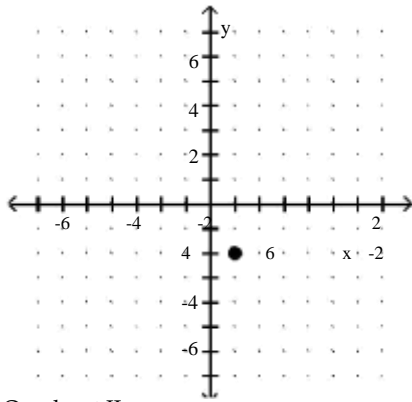
A) Quadrant III



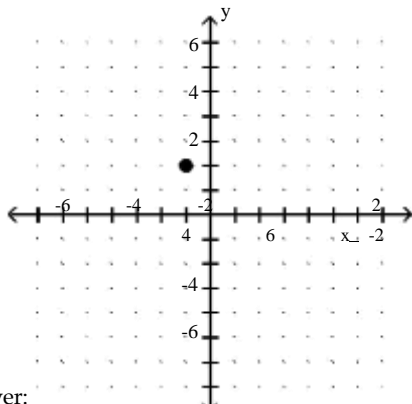
B) Quadrant III



C) Quadrant IV

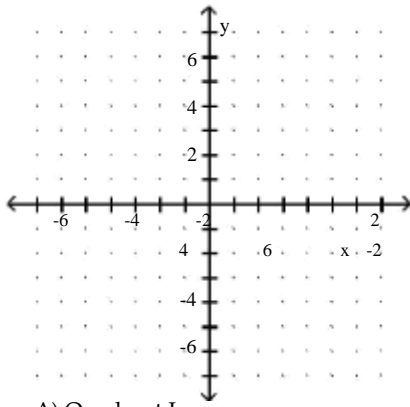


D) Quadrant II

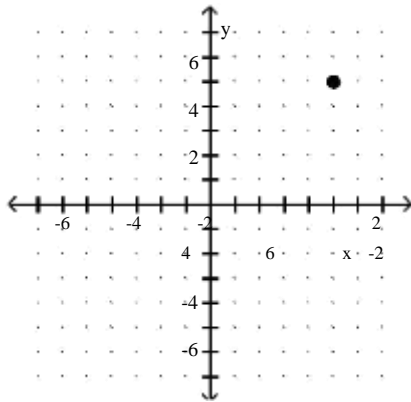


Answer:
B

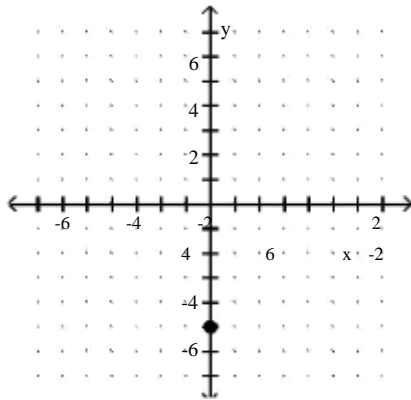
5) (0, 5)



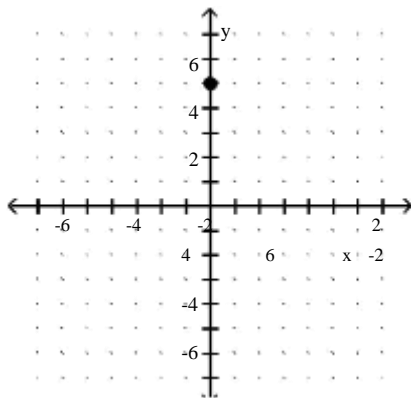
A) Quadrant I



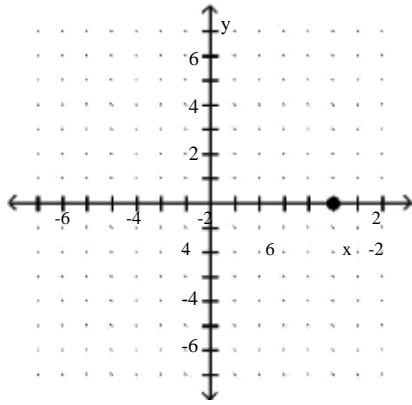
B) y-axis



C) y-axis

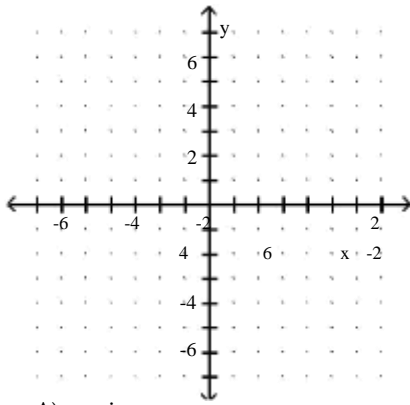


D) x-axis

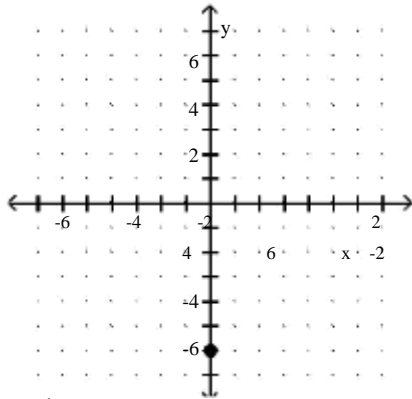


Answer: C

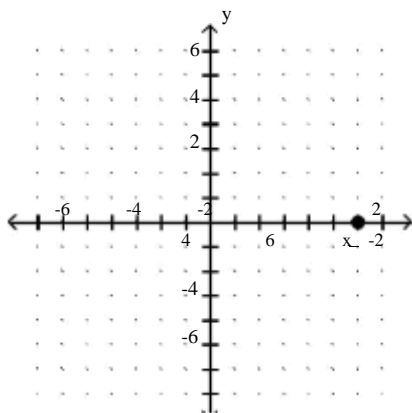
6) (-6, 0)



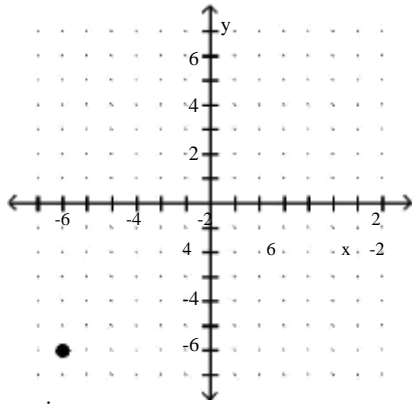
A) y-axis



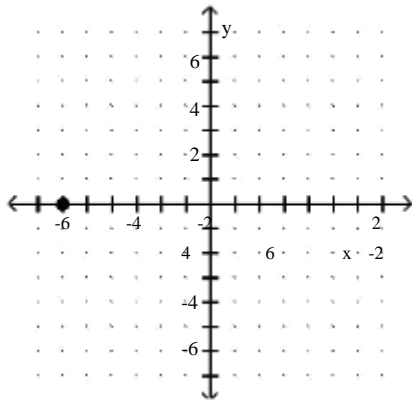
B) x-axis



C) Quadrant I



D) x-axis



Answer: D

Find the distance between P and Q

7) P(5, 3), Q(-3, 9)

- A) 100
- B) 10
- C) 20
- D) 11

Answer: B

8) P(4, 3), Q(-5, -5)

- A) $\sqrt{17}$
- B) $\sqrt{145}$
- C) 145
- D) 1

Answer: B

9) P(2, -1), Q(6, -3)

- A) $2\sqrt{5}$
- B) 12
- C) 6
- D) $12\sqrt{5}$

3 Answer:

A

10) P(-6, -4), Q(6, -7)

- A) $135\sqrt{15}$
- B) $3\sqrt{17}$
- C) 15
- D) 135

Answer: B

11) P(u - v, t), Q(u + v, t)

- A) $|u^2 - t^2|$
- B) $|v|$
- C) $2|v|$
- D) $2|u^2 - t^2|$

Answer: C

12) P(y, z), Q(z, y)

- A) $2|y - z|$
- B) $\sqrt{|2y - z|}$
- C) $|2y - z|$
- D) $|y + z|$

Answer: B

Find the coordinates of the midpoint of the line segment

PQ. 13) P(6, 7), Q(8, 9)

- A) (-2, -2)
- B) (8, 7)
- C) (14, 16)
- D) (7, 8)

Answer: D

14) P(-1, -9), Q(-8, -8)

- A) $\left(-\frac{17}{2}, 2\right)$
- B) (7, -1)
- C) (-9, -17)
- D) $\left(\frac{9}{2}, -\frac{17}{2}\right)$

Answer: D

15) P(7x, 3), Q(8x, 4)

- A) (15x, 7)
- B) (x, 1)
- C) $\left(\frac{7x}{2}, \frac{15}{2}\right)$
- D) $\left(\frac{15x}{2}, \frac{7}{2}\right)$

Answer: D

16) $P(u - w, t), Q(u + w, t)$

A) $(2u, 2t)$

B) (u, t)

C) (t, u)

D) $(-w, 0)$

Answer: B

17) $P(y, z), Q(z, y)$

A) $\left\{ \begin{array}{l} yz, yz \\ 2 \end{array} \right\}$

B) $\left\{ \begin{array}{l} \frac{2}{y+z}, \frac{y+z}{2} \\ 2 \end{array} \right\}$

C) (yz, yz)

D) $(y + z, y + z)$

Answer: B

Determine whether the given points are collinear.

18) $(-1, -2), (5, 16), (2, 7)$

A) Yes

B) No

Answer: A

19) $(-4, 5), (4, -3), (-2, 1)$

A) Yes

B) No

Answer: B

Identify the triangle PQR as isosceles, equilateral, or scalene.

20) $P(0, 0), Q(-8, 5), R(-3, 13)$

A) Scalene

B) Isosceles

C) Equilateral

Answer: B

21) $P(5, -1), Q(7, -4), R(0, -4)$

A) Scalene

B) Equilateral

C) Isosceles

Answer: A

22) $P(12, -12), Q(-12, 12), R(-12, 3\sqrt{12})$ $\sqrt{12}$

A) Equilateral

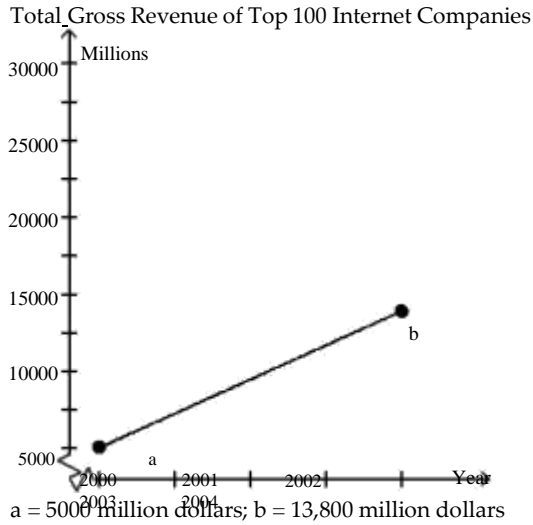
B) Scalene

C) Isosceles

Answer: A

Solve the problem.

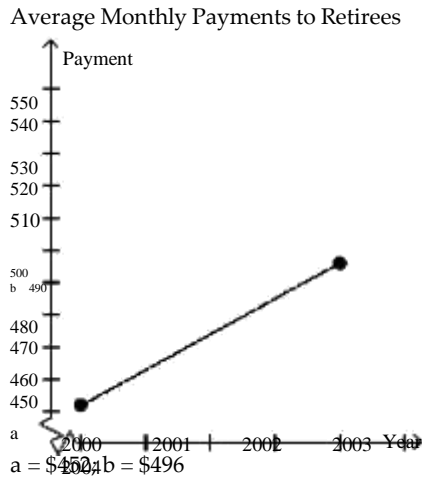
- 23) The graph shows the Total Gross Revenue (in millions of dollars) of Top 100 Internet Companies in the United States between 2000 and 2004. Use the midpoint formula to estimate the revenue for 2002.



- A) 8800 million dollars
- B) 17,500 million dollars
- C) 9400 million dollars
- D) 26,000 million dollars

Answer: C

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



- A) \$22
- B) \$496
- C) \$474
- D) \$500

Answer: C

25) 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.

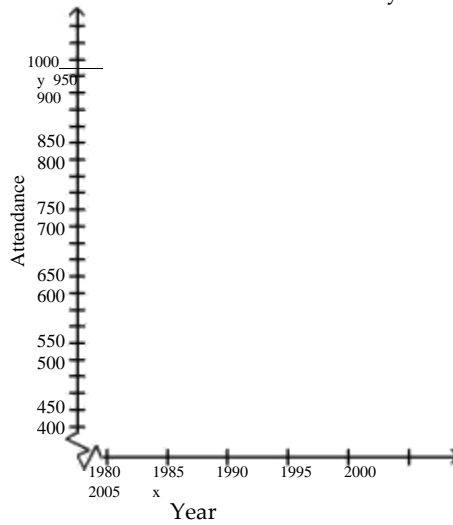
Year	Income (in dollars)
1960	21,000
1970	27,000
1980	33,000
1990	39,000
2000	45,000

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

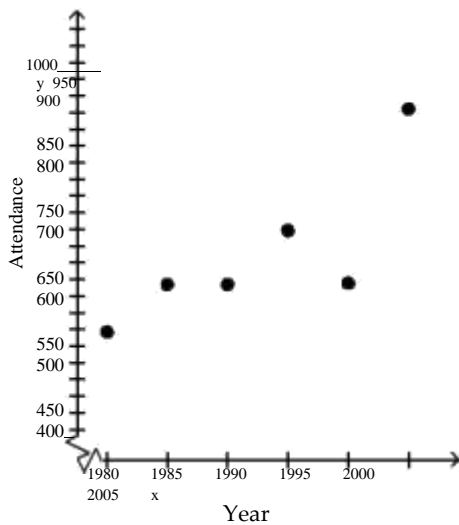
Answer: A

26) The table shows the total yearly attendance at home football games in thousands. The attendance numbers are rounded to the nearest thousand. Plot the data in a Cartesian coordinate system.

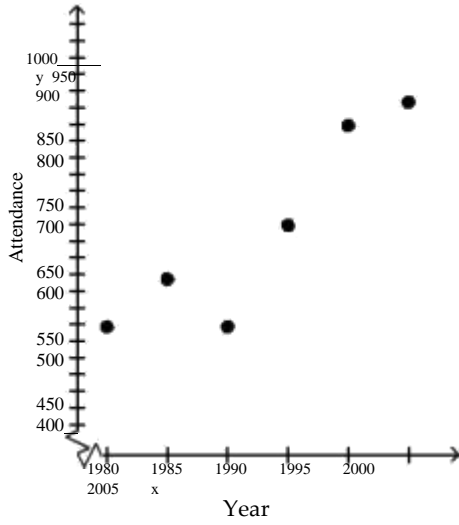
Year	Attendance
1980	545
1985	617
1990	695
1995	735
2000	805
2005	882



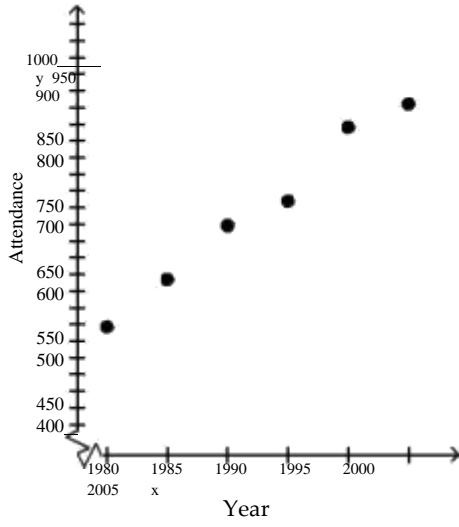
A)



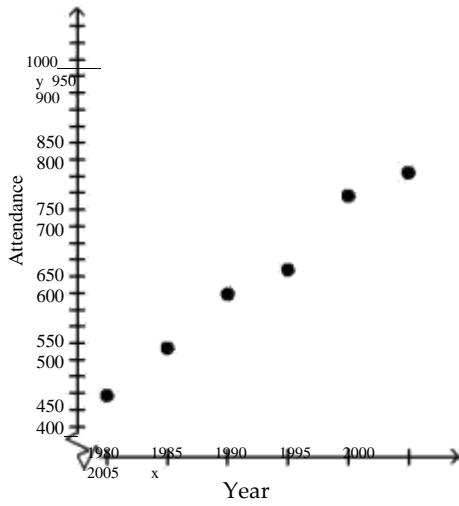
B)



C)



D)



Answer: C

27) A family is driving from Algebraville to Geometry City to Trig Town. With reference to the origin, Algebraville is located at (1, 3), Geometry City at (7, 11), and Trig Town at (19, 2), all numbers being in 1000-mile units. Find the distance traveled by the family. If necessary, round your answer to the nearest whole number.

- A) 10,000 mi
- B) 25 mi
- C) 25,000 mi
- D) 15,000 mi

Answer: C

28) A family is driving from Algebraville to Geometry City to Trig Town. With reference to the origin, Algebraville is located at (3, 4), Geometry City at (5, 10), and Trig Town at (18, 4), all numbers being in 1000-mile units. Find the distance from Algebraville directly to Trig Town. If necessary, round your answer to the nearest whole number.

- A) 15,000 mi
- B) 6325 mi
- C) 15 mi
- D) 16,155 mi

Answer: A

Provide an appropriate response.

29) Determine the quadrants in which the given point (x, y) may lie when $xy > 0$.

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

Answer: A

30) Determine the quadrants in which the given point (x, y) may lie when $x < 0$. A)

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

Answer: D

31) Find all the points having an x-coordinate of 9 whose distance from the point (3, -2) is 10. A)

- (9, 2), (9, -4)
- B) (9, -12), (9, 8)
- C) (9, 6), (9, -10)
- D) (9, 13), (9, -7)

Answer: C

32) The points (-1, 6), (2, 9), (4, 1), and (7, 4) are the vertices of a quadrilateral. Is the quadrilateral a rectangle?

- A) Yes
- B) No

Answer: A

33) The points (1, 9), (4, 8), (6, 0), and (9, 3) are the vertices of a quadrilateral. Is the quadrilateral a rectangle?

- A) Yes
- B) No

Answer: B

34) Graph the rectangle with vertices (3, 6), (6, 9), (8, 1), and (11, 4). Are the midpoints of the sides of the rectangle the vertices of a rectangle?

A) Yes

B) No

Answer: A

35) Graph the rectangle with vertices (-1, 5), (2, 8), (4, 0), and (7, 3). Are the midpoints of the sides the vertices of a square?

A) Yes

B) No

Answer: B

Determine whether the given point is on the graph of the equation.

36) $y = 7x - 3$; (-1, -10)

A) Yes

B) No

Answer: A

37) $7y = -5x + 8$; $0, \frac{6}{7}$

A) Yes

B) No

Answer: B

38) $2x + 3y^2 = 24$; (6, -2)

A) Yes

B) No

Answer: A

39) $y = \sqrt{x - 1}$; (50, 7)

A) Yes

B) No

Answer: A

40) $y = \frac{2}{x} - 4$; $\left(4, \frac{4}{9}\right)$

A) Yes

B) No

Answer: B

41) $y^2 = 2x$; $\left(5, \sqrt{10}\right)$

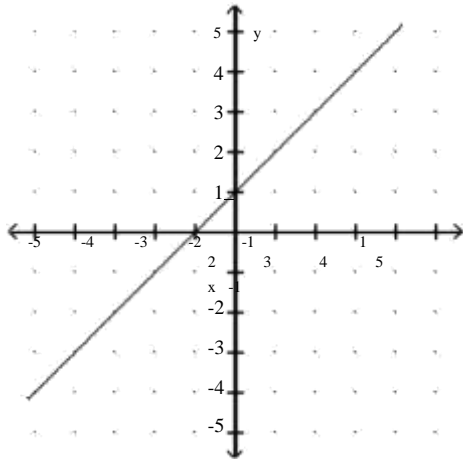
A) Yes

B) No

Answer: A

Write the x- and y-intercepts of the graph.

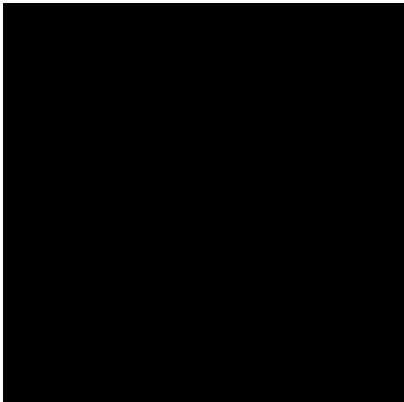
42)



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

Answer: C

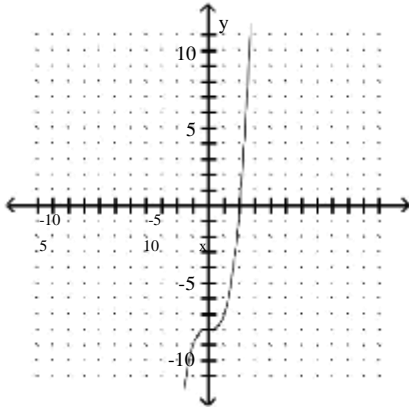
43)



- A) x-intercepts: 5, -5; y-intercepts: 7, -7
- B) x-intercepts: 7, -7
- C) y-intercepts: 5, -5
- D) x-intercepts: 7, -7; y-intercepts: 5, -5

Answer: D

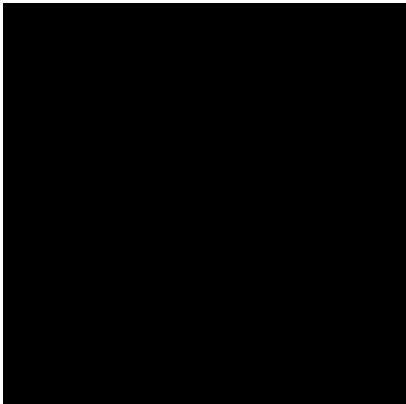
44)



- A) x-intercept: 2; y-intercept: -8
- B) x-intercept: -2; y-intercept: 8
- C) x-intercept: 2; y-intercept: 8
- D) x-intercept: -2; y-intercept: -8

Answer: A

45)

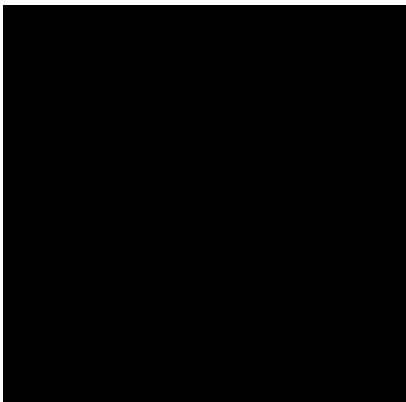


- A) x-intercepts: 2, -2
- B) y-intercept: -2
- C) x-intercepts: 2, -2; y-intercept: 0
- D) x-intercepts: 2, -2; y-intercept: -2

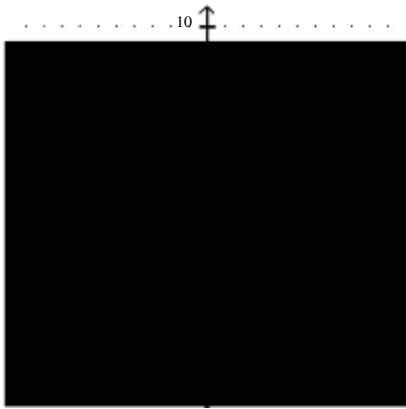
Answer: D

Graph the equation by plotting points

46) $y = x + 1$



A)



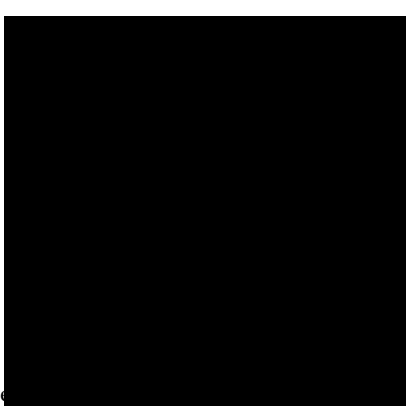
B)



C)



D)

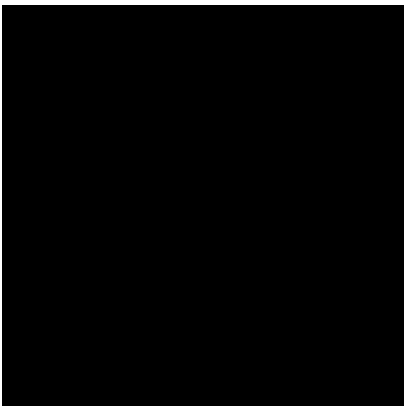


Answer

$$47) y = \frac{4}{3}x - 2$$



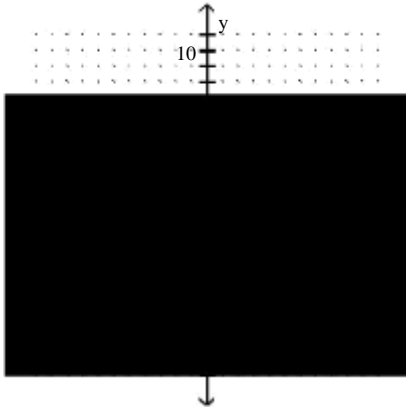
A)



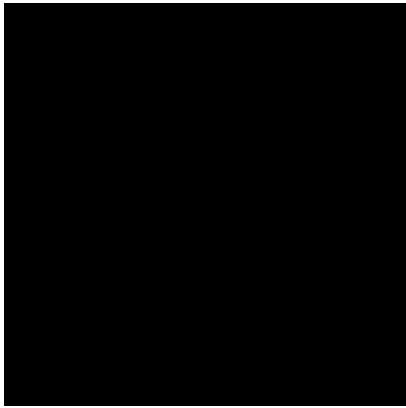
B)



C)



D)

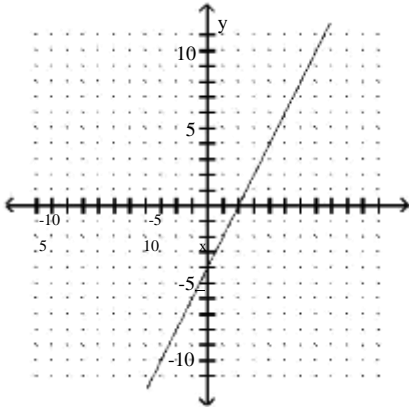


Answer: B

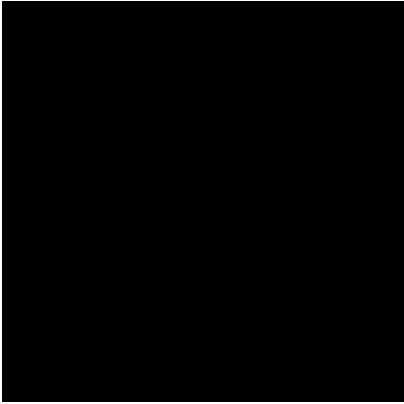
48) $y = 2x + 4$



A)



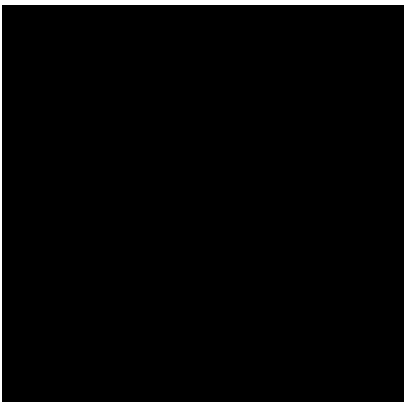
B)



C)

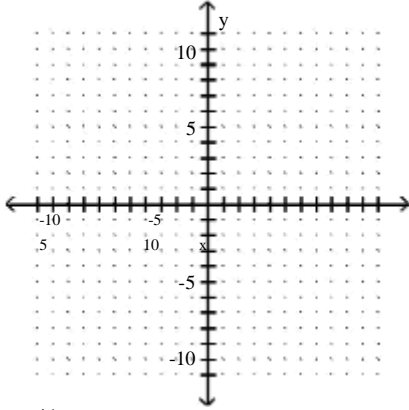


D)

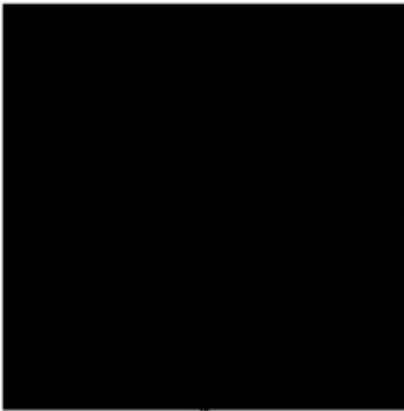


Answer: D

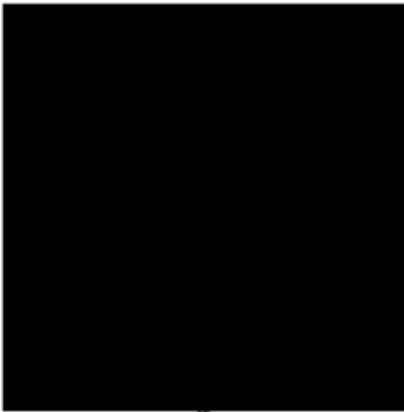
49) $y = |x| - 2$



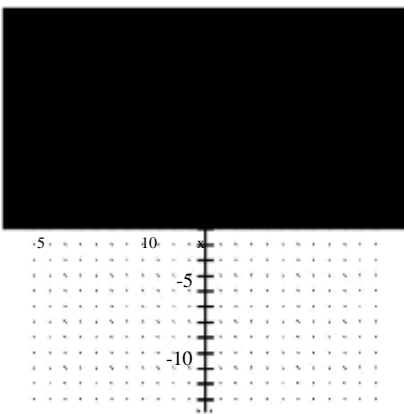
A)



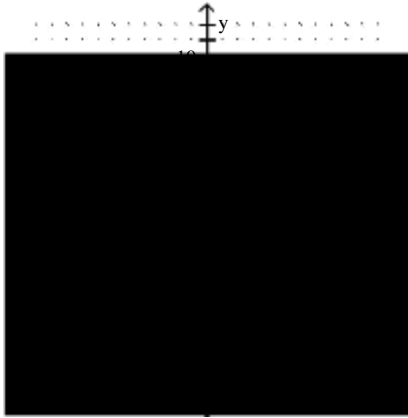
B)



C)



D)

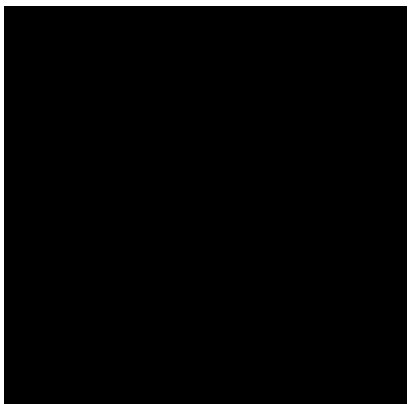


Answer: D

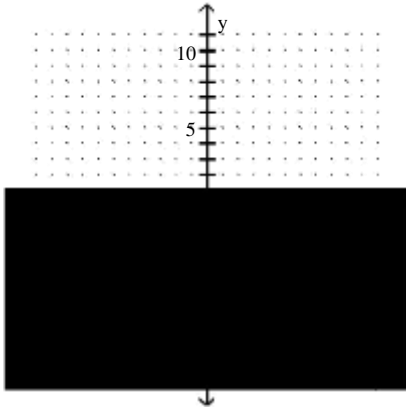
50) $y = | -1 - |$
x



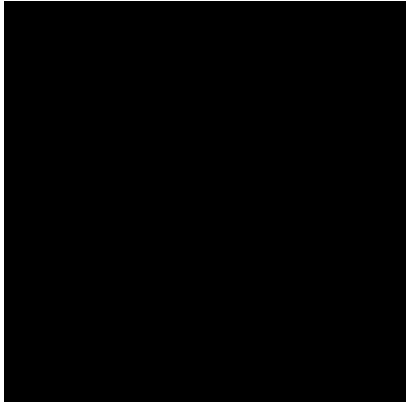
A)



B)



C)

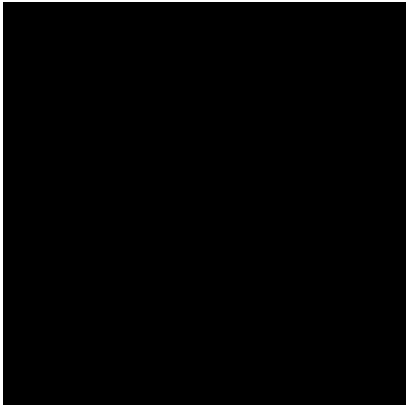


D)

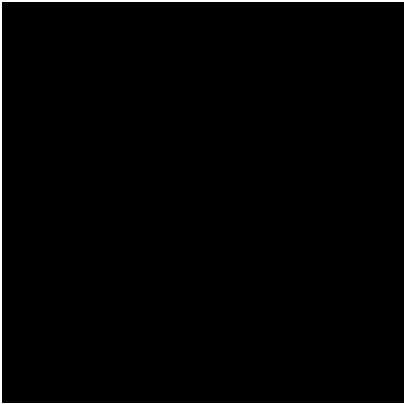


Answer: A

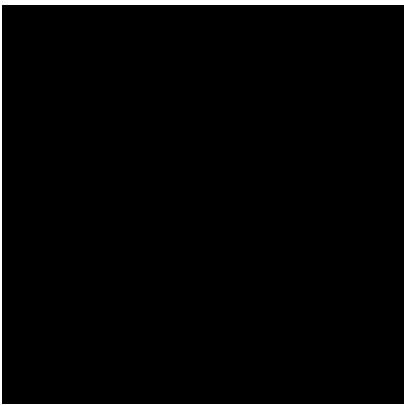
51) $y = x^2 - 5$



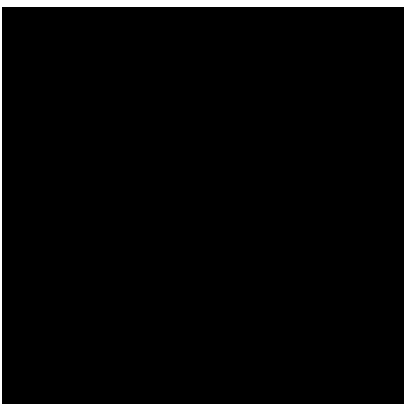
A)



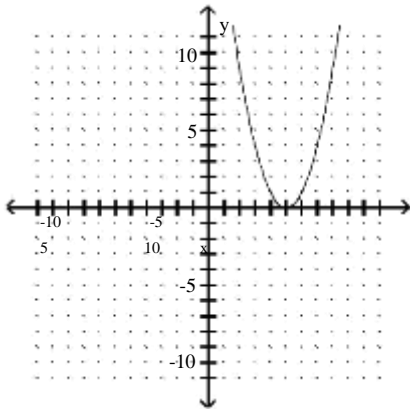
B)



C)



D)



Answer: B

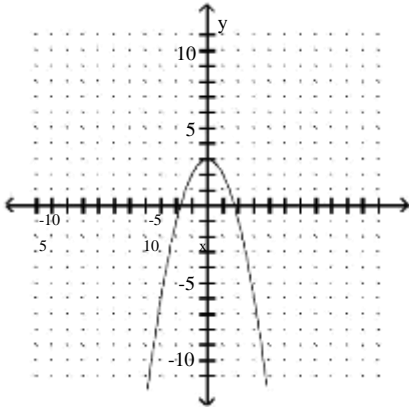
52) $y = -x^2 - 3$



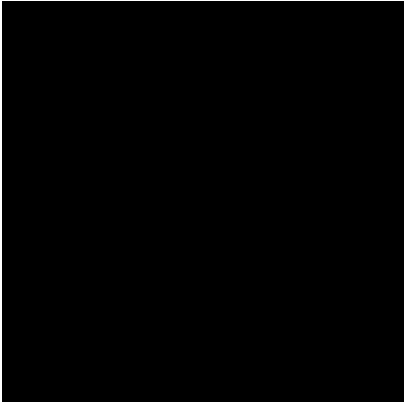
A)



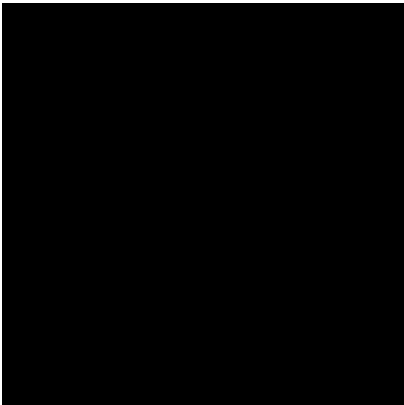
B)



C)

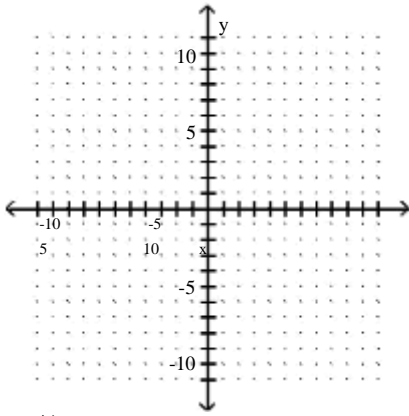


D)

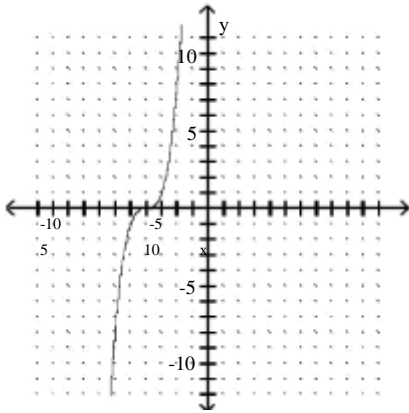


Answer: A

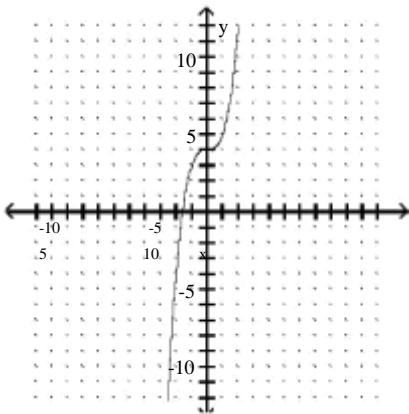
53) $y = x^3 + 4$



A)



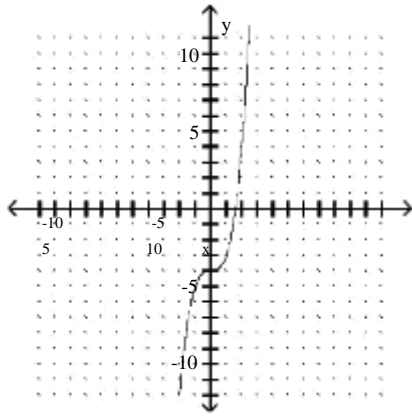
B)



C)

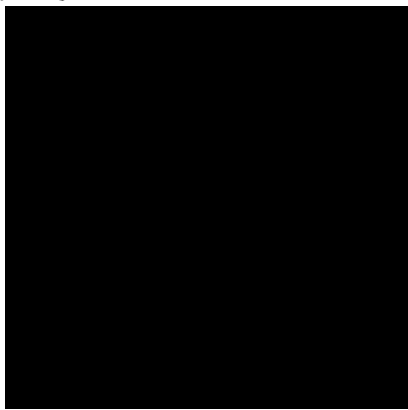


D)

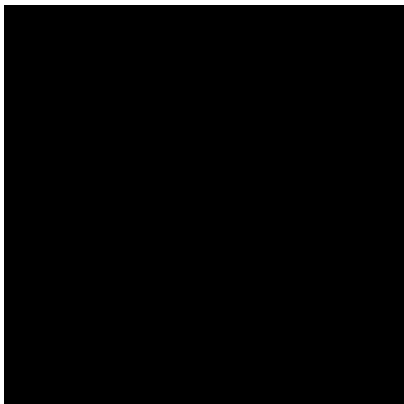


Answer: B

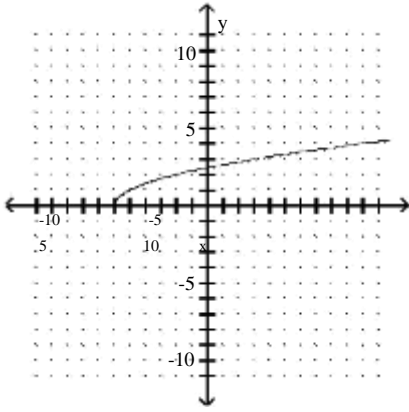
54) $y = \sqrt{x + 6}$



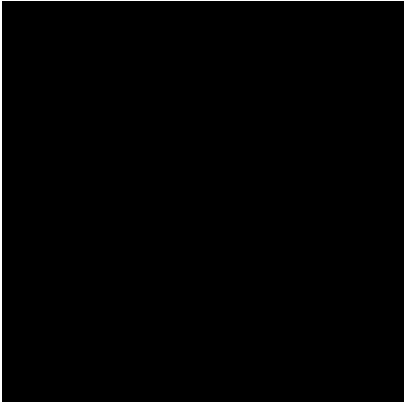
A)



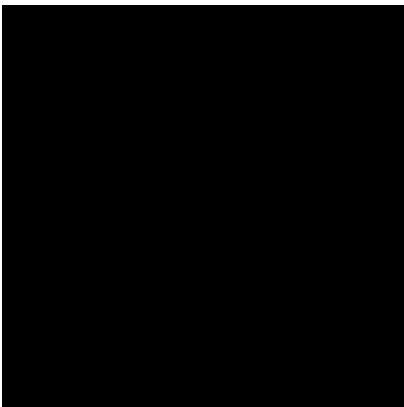
B)



C)



D)



Answer:
B

Find the x- and y-intercepts of the graph of the equation.

55) $10y - 2x = -6$

A) x-intercept: -5; y-intercept: $\frac{3}{5}$

B) x-intercept: -3; y-intercept: -5

C) x-intercept: -5; y-intercept: $-\frac{3}{5}$

D) x-intercept: 3; y-intercept: -5

Answer: D

56) $5x - 10y = 20$

A) x-intercept: -4; y-intercept: 2

B) x-intercept: 4; y-intercept: -2

C) x-intercept: 2; y-intercept: -4

D) x-intercept: -2; y-intercept: 4

Answer: B

57) $9x^2 + y^2 = 9$

A) x-intercepts: -3, 3; y-intercepts: -1, 1

B) x-intercepts: -1, 1; y-intercepts: -3, 3

C) x-intercepts: -1, 1; y-intercepts: -9, 9

D) x-intercepts: -9, 9; y-intercepts: -1, 1

Answer: B

58) $y = x^2 + 14x + 48$

A) x-intercepts: 6, 8; y-intercept: 48

B) x-intercepts: -6, -8; y-intercept: 48

C) x-intercept: 48; y-intercepts: 6, 8

D) x-intercept: 48; y-intercepts: -6, -8

Answer: B

59) $\frac{x}{3} + \frac{-y}{4} = 3$

A) x-intercept: 6; y-intercept: 7

B) x-intercept: 4; y-intercept: 3

C) x-intercept: 9; y-intercept: 12

D) x-intercept: 12; y-intercept: 9

Answer: C

60) $x = y^2 - 10y + 24$

A) x-intercept: -24; y-intercepts: -6, -4

B) x-intercepts: 6, 4; y-intercept: 24

C) x-intercepts: -6, -4; y-intercept: -24

D) x-intercept: 24; y-intercepts: 6, 4

Answer: D

61) $y = \sqrt{6 - x^2}$

- A) x-intercept: 4; y-intercept: 4
- B) x-intercepts: -4, 4; y-intercept: 4
- C) x-intercept: 4; y-intercepts: -4, 4
- D) x-intercept: 4; y-intercept: -4

Answer: B

Test the equation for symmetry with respect to the x-axis, the y-axis, and the origin.

62) $y = 3x^2 + 1$

- A) x-axis only
- B) x-axis, y-axis, origin
- C) y-axis only
- D) origin only

Answer: C

63) $2x = 5y^2 - 3$

- A) x-axis, y-axis, origin
- B) origin only
- C) y-axis only
- D) x-axis only

Answer: D

64) $y = -6x^3 + 9x$

- A) x-axis only
- B) x-axis, y-axis
- C) x-axis, origin
- D) origin only

Answer: D

65) $y = 9x^5 + 9x^3$

- A) no symmetry
- B) y-axis only
- C) x-axis, y-axis, origin
- D) origin only

Answer: D

66) $y = 5x^4 - 3x + 5$

- A) x-axis, origin
- B) no symmetry
- C) x-axis only
- D) origin only

Answer:

B

Specify the center and radius of the circle.

67) $(x + 5)^2 + (y + 8)^2 = 9$

A) center: (8, 5); radius: 9

B) center: (-8, -5); radius: 9

C) center: (-5, -8); radius: 3

D) center: (5, 8); radius: 3

Answer: C

68) $(x - 2)^2 + (y + 7)^2 = 16$

A) center: (2, -7); radius: 4

B) center: (-2, 7); radius: 16

C) center: (7, -2); radius: 16

D) center: (-7, 2); radius: 4

Answer: A

69) $(x - 2)^2 + (y - 5)^2 = 6$

A) center: (-2, -5); radius: $\sqrt{6}$

B) center: (-2, -5); radius: 6

C) center: (2, 5); radius: 6

D) center: (2, 5); radius: $\sqrt{6}$

Answer: D

70) $x^2 + y^2 - 10x - 18y + 102 = 0$ A)

center: (-9, -5); radius: 4

B) center: (5, 9); radius: 2

C) center: (-5, -9); radius: 4

D) center: (9, 5); radius: 2

Answer: B

71) $x^2 - 14x + y^2 - 10y + 25 = 0$

A) center: (7, 5); radius: 49

B) center: (7, 5); radius: 7

C) center: (-7, -5); radius: 49

D) center: (-7, -5); radius: 7

Answer: B

72) $3x^2 + 3y^2 + 18x + 30y + 75 = 0$ A)

center: (5, 3); radius: 9

B) center: (3, 5); radius: 9

C) center: (-5, -3); radius: 3

D) center: (-3, -5); radius: 3

Answer: D

Find the standard form of the equation of a circle that satisfies the given conditions.

A) $(x - 6)^2 + y^2 = 16$

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

$(x + 6)^2 + y^2 = 16$

D) $x^2 + (y + 6)^2 = 4$

Answer: A

74) Center at (0, -8); radius 8

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

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

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

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

Answer: B

75) Center at (4, 9); radius $14\sqrt{1}$

A) $(x - 4)^2 + (y - 9)^2 = 14$

B) $(x + 9)^2 + (y + 4)^2 = 196$ C)

$(x - 9)^2 + (y - 4)^2 = 196$

D) $(x + 4)^2 + (y + 9)^2 = 14$

Answer: A

76) Center (6, -1); passing through the point (9, 3)

A) $(x - 6)^2 + (y + 1)^2 = 25$

B) $(x - 1)^2 + (y + 6)^2 = 9$ C)

$(x + 6)^2 + (y - 1)^2 = 25$

D) $(x + 1)^2 + (y - 6)^2 = 9$

Answer: A

77) Center (15, 7); containing the origin

A) $(x - 15)^2 + (y - 7)^2 = 17$

B) $(x - 7)^2 + (y - 15)^2 = 17$ C)

$(x - 15)^2 + (y - 7)^2 = 274$

D) $(x - 7)^2 + (y - 15)^2 = 274$

Answer: C

78) Center (18, 20); touching the x-axis

A) $(x - 20)^2 + (y - 18)^2 = 324$

B) $(x - 20)^2 + (y - 18)^2 = 20$ C)

$(x - 18)^2 + (y - 20)^2 = 400$

D) $(x - 18)^2 + (y - 20)^2 = 324$

Answer: C

79) Center (19, 20); touching the y-axis

A) $(x - 19)^2 + (y - 20)^2 = 19$ B)

$(x - 20)^2 + (y - 19)^2 = 19$ C) $(x -$

$19)^2 + (y - 20)^2 = 361$

D) $(x - 20)^2 + (y - 19)^2 = 361$

Answer: C

80) Diameter with endpoints (-2, -4) and (-2, 4)

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

B) $(x + 2)^2 + y^2 = 16$ C)

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

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

Answer: B

81) Diameter with endpoints (-9, 6) and (-1, -4)

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

B) $(x + 5)^2 + y^2 = 25$

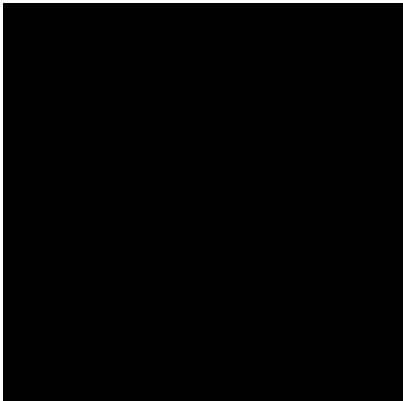
C) $(x - 1)^2 + (y + 5)^2 = 41$ D)

$(x + 5)^2 + (y - 1)^2 = 41$

Answer: D

Graph the circle.

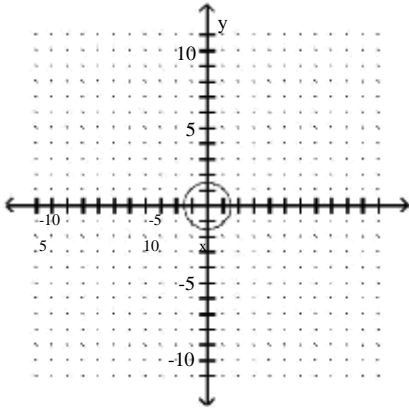
82) $x^2 + y^2 = 25$



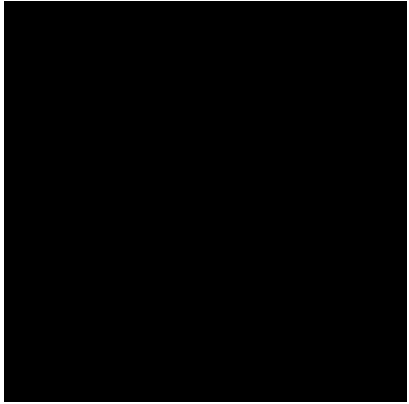
A)



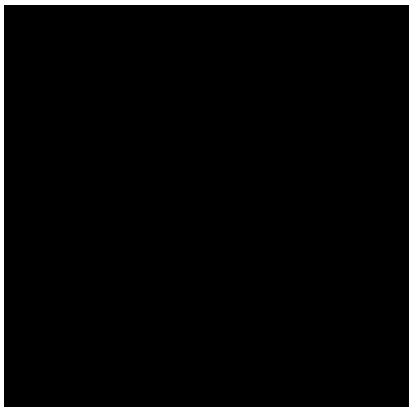
B)



C)

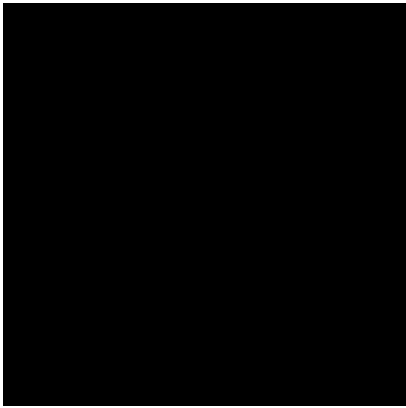


D)



Answer: D

83) $(x - 6)^2 + (y - 4)^2 = 16$



A)



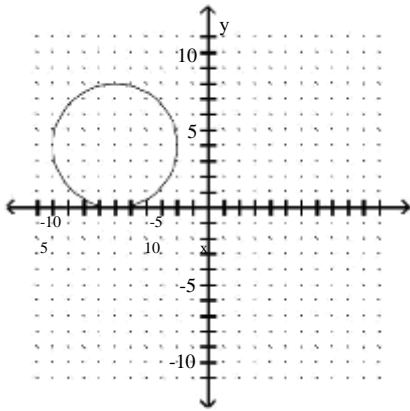
B)



C)

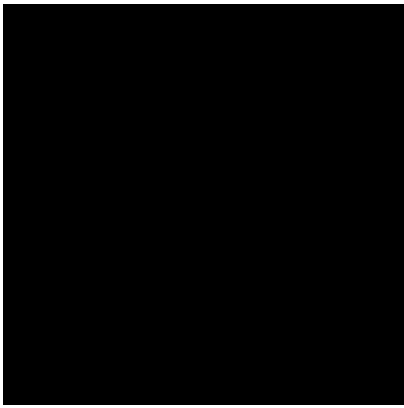


D)

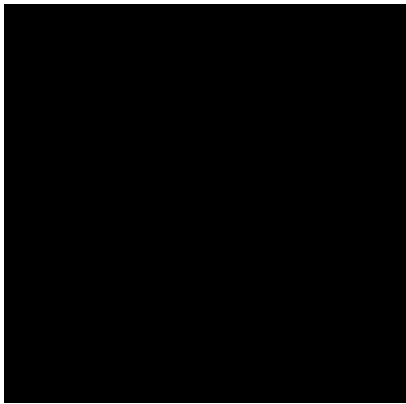


Answer: A

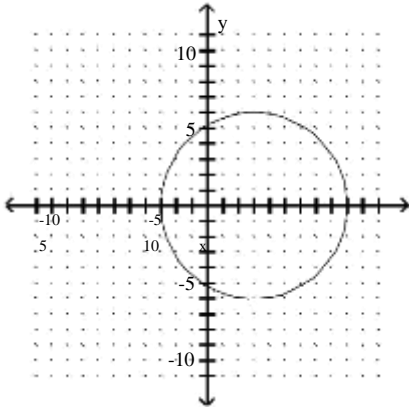
$$84) x^2 + (y - 3)^2 = 36$$



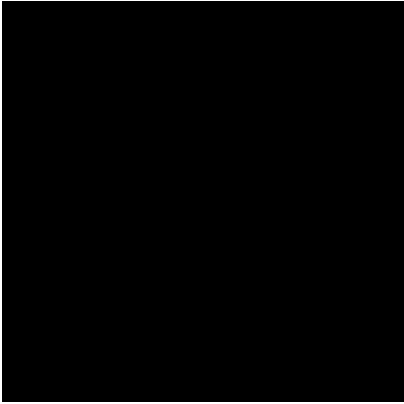
A)



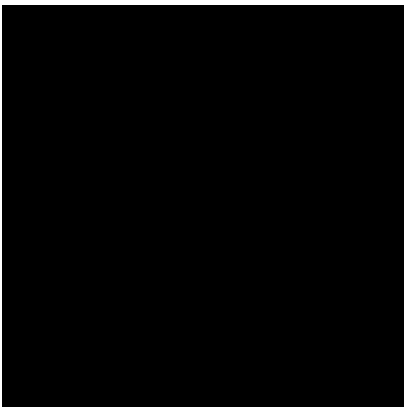
B)



C)

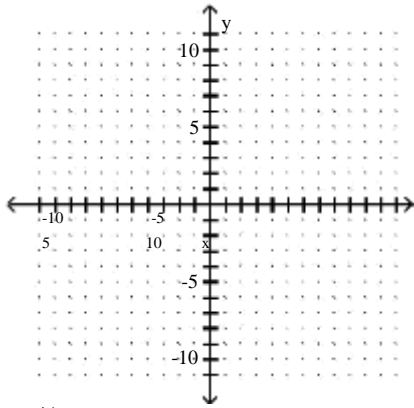


D)



Answer: A

85) $(x - 3)^2 + (y + 1)^2 = 4$



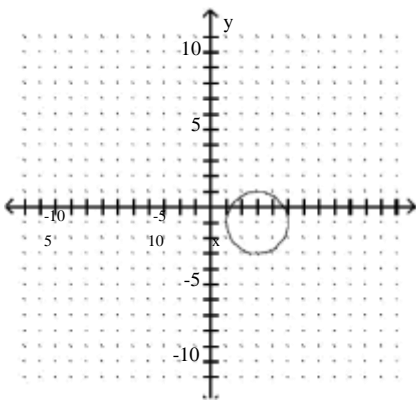
A)



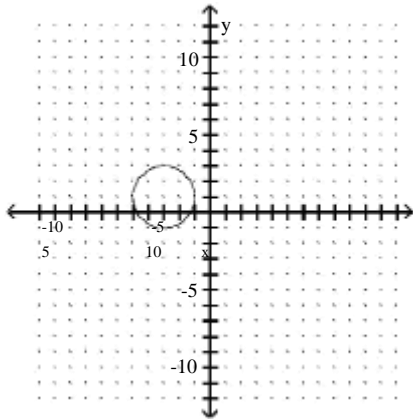
B)



C)

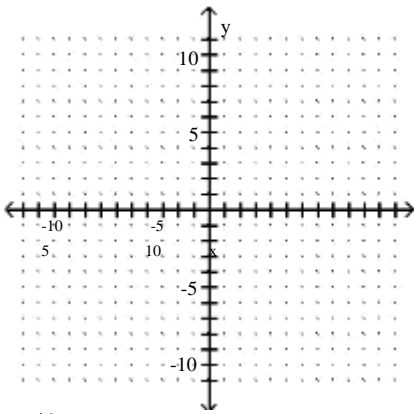


D)

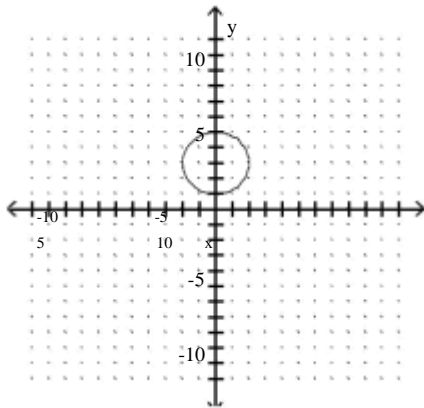


Answer: C

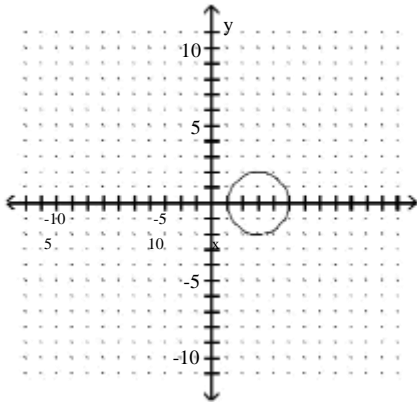
86) $(x-3)^2 + y^2 = 4$



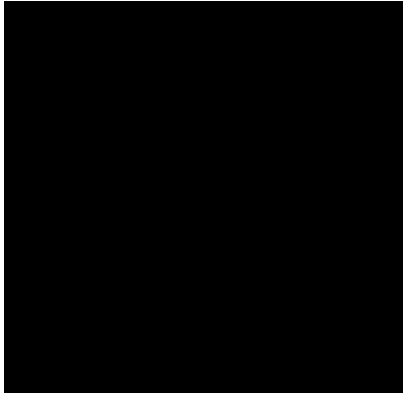
A)



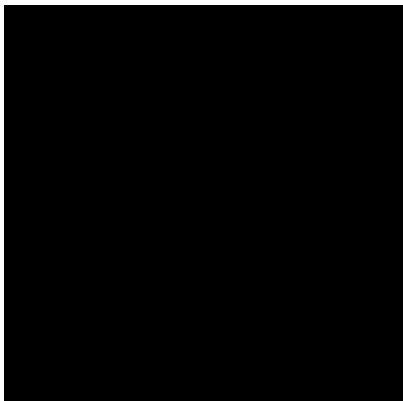
B)



C)

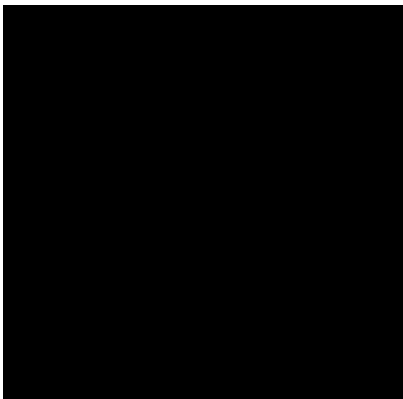


D)

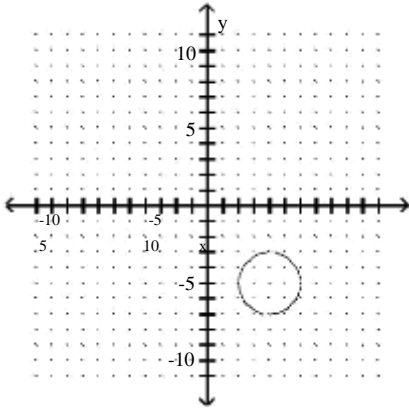


Answer: B

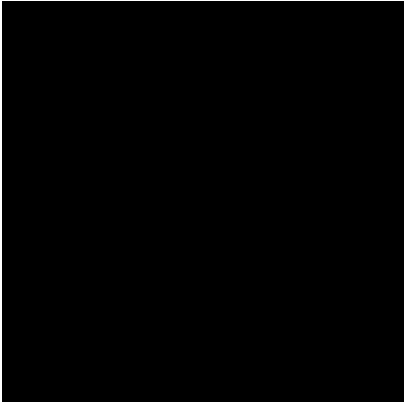
$$87) x^2 + y^2 - 8x - 10y + 37 = 0$$



A)



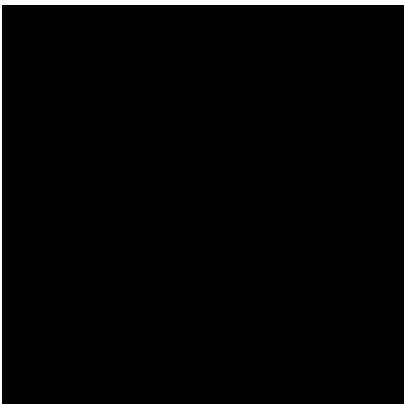
B)



C)



D)



Answer:
B

88) $x^2 + y^2 + 6x + 8y + 0 = 0$



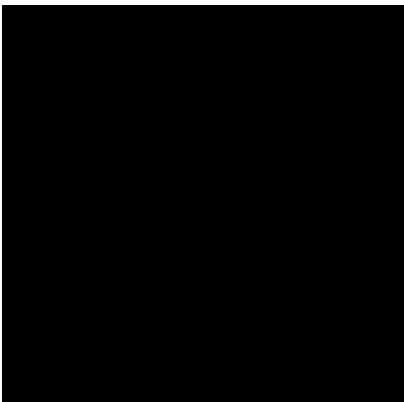
A)



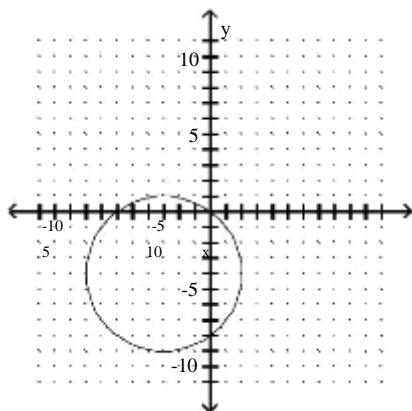
B)



C)



D)



Answer: D

Find: a. The center and radius of the circle. b. The x- and y-intercepts of the graph of the circle. 89) $x^2 + y^2 + 2x - 2y - 5 = 0$

- A) a. center = (-1, 1); radius = $\sqrt{7}$
 b. $(-1 + \sqrt{6}, 0), (0, 1 + \sqrt{6})$
- B) a. center = (1, -1); radius = $\sqrt{7}$
 b. $(-1 + \sqrt{6}, 0), (-1 - \sqrt{6}, 0), (0, 1 + \sqrt{6}), (0, 1 - \sqrt{6})$
- C) a) center = (-1, 1); radius = $\sqrt{7}$
 b. $(-1 + \sqrt{6}, 0), (-1 - \sqrt{6}, 0), (0, 1 + \sqrt{6}), (0, 1 - \sqrt{6})$
- D) a.) $\sqrt{7}$ center = (-1, -1); radius = 7
 b. $(-1 + 2\sqrt{2}, 0), (-1 - 2\sqrt{2}, 0), (0, 1 + \sqrt{6}), (0, 1 - \sqrt{6})$

6) Answer: C

90) $x^2 + y^2 - 2x + 2y - 10 = 0$

- A) a. center = (1, -1); radius = $2\sqrt{3}$
 b. $(-1 + \sqrt{11}, 0), (-1 - \sqrt{11}, 0), (0, 1 + \sqrt{11}), (0, 1 - \sqrt{11})$
- 11) B) a. center = (-1, -1); radius = $2\sqrt{3}$
 b. $(1 + \sqrt{11}, 0), (0, -1 + \sqrt{11})$
- C) a. center = (1, -1); radius = $2\sqrt{3}$
 b. $(1 + \sqrt{11}, 0), (1 - \sqrt{11}, 0), (0, -1 + \sqrt{11}), (0, -1 - \sqrt{11})$
- 11) D) a. center = (-1, 1); radius = 12
 b. $(1 + \sqrt{11}, 0), (0, -1 + \sqrt{11})$

11) Answer: C

91) $x^2 + y^2 - 2y - 8 = 0$

- A) a. center = (0, 1); radius = 3
 b. $(2\sqrt{2}, 0), (0, 4)$
- B) a. center = (0, 1); radius = 3
 b. $(2\sqrt{2}, 0), (-2\sqrt{2}, 0), (0, 4), (0, -2)$
- 2) C) a. center = (0, -1); radius = 9
 b. $(2\sqrt{2}, 0), (0, 4), (0, -2)$
- D) a. center = (1, 0); radius = 9
 b. $(2\sqrt{2}, 0), (-2\sqrt{2}, 0), (0, 4), (0, -2)$

-2) Answer: B

92) $4x^2 - 16x + 4y^2 - 48 = 0$

- A) a. center = (-2, 0); radius = 4
b. (6, 0), (-2, 0), (0, 4 $\sqrt{3}$), (0, -4 $\sqrt{3}$)
- B) a.)center = (-2, 0); radius = 16
b. (6, 0), (0, 4 $\sqrt{3}$)
- C) a. center = (2, 0); radius = 16
b. (6, 0), (-2, 0), (0, 4 $\sqrt{3}$), (0, -4 $\sqrt{3}$)
- D) a.)center = (2, 0); radius = 4
b. (6, 0), (-2, 0), (0, 4 $\sqrt{3}$), (0, -4 $\sqrt{3}$)

Answer: D

93) $3x^2 + 3y^2 - 2y = 0$

- A) a. center = 0, 3 ; radius = $\frac{1}{3}$
b. $\left(0, 3 \right)$
- B) a. center = 0, 3 ; radius = $\frac{1}{3}$
b. (0, 0), 0, 3
- C) a. center = 0, -3 ; radius = $\frac{1}{3}$
b. (0, 0), 0, 3
- D) a. center = 0, 3 ; radius = $\frac{3}{1}$
b. (0, 0)

Answer: B

94) $x^2 + y^2 + 4 = 0$

- A) a. center = (0, 0); radius = 2
b. (2, 0), (0, 2)
- B) a. \emptyset
b. \emptyset
- C) a. center = (0, 0); radius = 2
b. (-2, 0), (2, 0), (0, 2), (0, -2)
- D) a. center = (0, 0); radius = 4
b. (-2, 0), (2, 0), (0, 2), (0, -2)

Answer: B

Solve for the requested variable.

95) The equation $E = 0.0057x^3 - 0.0044x^2 + 0.175x + 1.53$ gives the approximate total earnings of a company, in millions of dollars, where $x = 0$ corresponds to 1996. Determine the earnings for 1998.

- A) \$1.71 million
- B) \$1.94 million
- C) \$2.17 million
- D) \$1.91 million

Answer: D

96) Your company uses the quadratic model $y = -11x^2 + 350x$ to represent how many units (y) of a new product

will be sold (x) weeks after its release. How many units can you expect to sell in week 9? A)

4041 units

B) 2259 units

C) 3249 units

D) 3051 units

Answer: B

97) Your company uses the quadratic model $y = -4.5x^2 + 150x$ to represent the average number of new customers who will be signed on (x) weeks after the release of your new service. How many new customers can you expect to gain in week 28?

A) -1428 customers

B) 336 customers

C) 672 customers

D) 4074 customers

Answer: C

Find the slope of the line through the given pair of points. 98) (6, 5) and (7, 1)

A) -4 $\frac{1}{6}$

B) $\frac{6}{13}$

C) -4

D) 4

Answer: C

99) (1, -7) and (6, -1)

A) -7 $\frac{8}{5}$

B) 6 $\frac{5}{6}$

C) 5 $\frac{6}{5}$

D) -5 $\frac{6}{5}$

Answer: C

100) (-7, 15) and (16, -16)

A) 23 $\frac{31}{23}$

B) -23 $\frac{31}{23}$

C) -31 $\frac{23}{31}$

D) -9 $\frac{1}{9}$

Answer:

B

101) (4, 2) and (4, 3)

A) $\frac{5}{8}$

B) $-\frac{1}{8}$

C) 0

D) undefined

Answer: D

102) (-6, 7), (9, 7)

A) 15

B) -15

C) 0

D) undefined

Answer: C

103) ($\sqrt{3}$, -1) and (0.45, -1)

A) $\sqrt{3} - 0.45$

B) 0

C) $0.45 - \sqrt{3}$

D) undefined

Answer: B

104) (19.5, 16.9), (9.9, 9.2)

A) $-\frac{96}{77}$

B) $\frac{96}{77}$

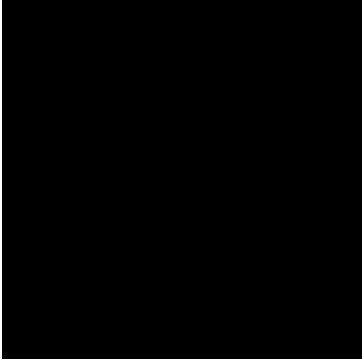
C) $\frac{77}{96}$

D) $-\frac{77}{96}$

Answer: C

Find the slope of the line.

105)



- A) 3
- B) 1
- C) -1
- D) -3

Answer: C

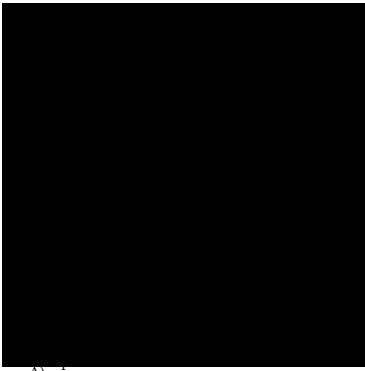
106)



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

Answer: A

107)



A) $\frac{1}{2}$

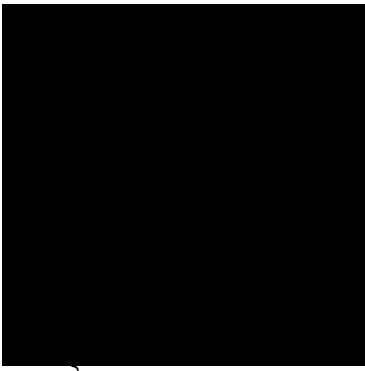
B) 2

C) -2

D) $-\frac{1}{2}$

Answer: B

108)



A) $\frac{9}{5}$

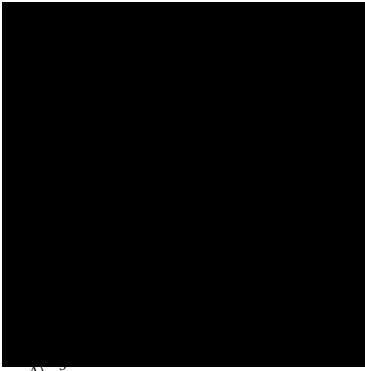
B) $-\frac{5}{9}$

C) $-\frac{9}{5}$

D) $\frac{5}{9}$

Answer: A

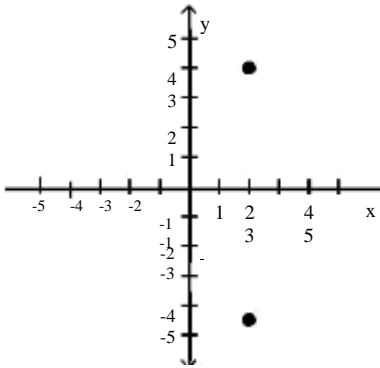
109)



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

Answer: B

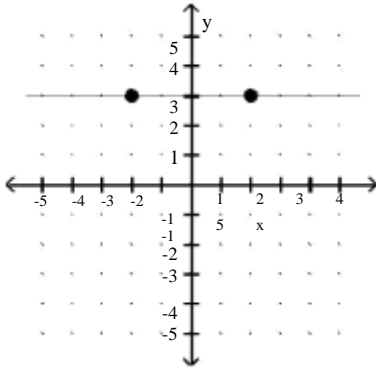
110)



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

Answer: D

111)



- A) -4
- B) 0
- C) 4
- D) undefined

Answer: B

Find an equation in slope-intercept form of the line that passes through the given point and has slope m .

112) $(0, 6); m = \frac{4}{3}$

- A) $y = 6x + 3$
- B) $y = 6x - 3$
- C) $y = 3x - 6$
- D) $y = 3x + 6$

Answer: D

113) $(0, 4); m = -\frac{5}{7}$

- A) $y = -\frac{5}{7}x - 4$
- B) $y = 4x - \frac{5}{7}$
- C) $y = 4x + \frac{5}{7}$
- D) $y = -\frac{5}{7}x + 4$

Answer: D

114) (0, 3); m = $\frac{3}{4}$

A) $y = \frac{3}{4}x + 3$

B) $y = 3x + \frac{3}{4}$

C) $y = \frac{3}{4}x - 3$

D) $y = 3x - \frac{3}{4}$

Answer: A

115) (-6, 0); m = -5

A) $y = 6x - 5$

B) $y = 5x - 6$

C) $y = -6x - 5$

D) $y = -5x - 30$

Answer: D

116) (4, 4); m = $-\frac{3}{5}$

A) $y = -5x - 5$ $\frac{3}{32}$

B) $y = -3x + \frac{5}{32}$

C) $y = -5x + \frac{32}{5}$ —

D) $y = -5x + \frac{3}{32}$

Answer: D

117) (5, 2); m = $-\frac{3}{4}$

A) $y = -4x + \frac{3}{23}$

B) $y = -3x - \frac{23}{4}$ —

C) $y = -4x + \frac{23}{4}$ —

D) $y = -4x - \frac{23}{4}$

Answer: A

118) $(9, -3)$; $m = -\frac{3}{4}$

A) $y = -\frac{3}{4}x + 29$

B) $y = -\frac{4}{3}x + 6$

C) $y = -\frac{3}{4}x + 15$

D) $y = \frac{3}{4}x - 15$

Answer: C

119) $(4, 8)$; $m = 0$

A) $y = 8$

B) $x = 4$

C) $y = -2x + 0$

D) $y = -2x + 0$

Answer: A

120) $(7, 6)$; m is undefined

A) $y = 6$

B) $x = 7$

C) $x = 6$

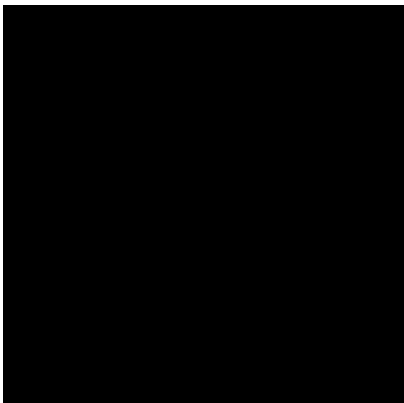
D) $y = 7$

Answer: B

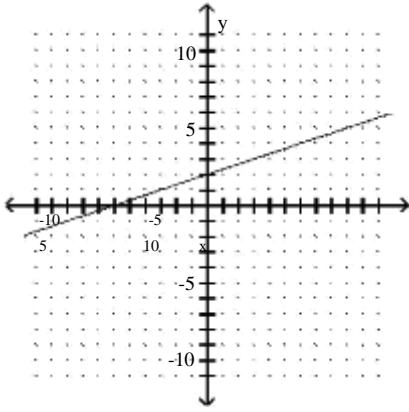
Sketch the graph of the line by locating the second point with the rise-and-run method.

121) Through $(0, 2)$, $m = \frac{1}{3}$

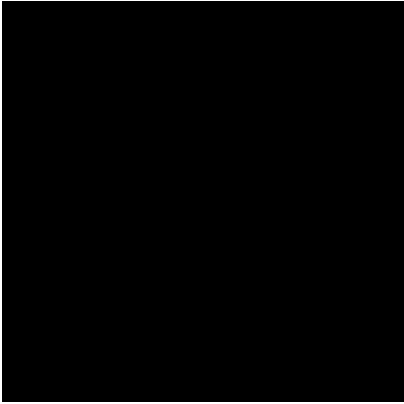
3



A)



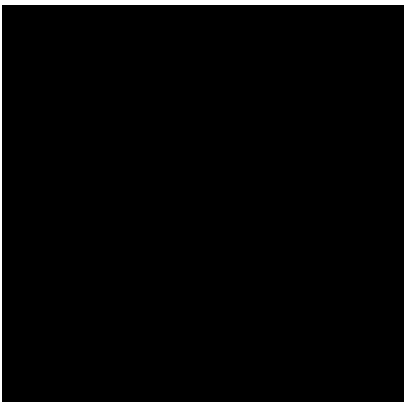
B)



C)

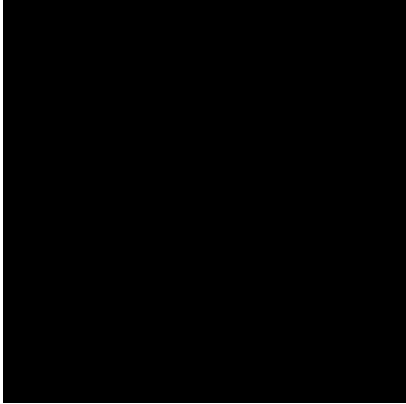


D)



Answer: A

122) Through (0, 6), $m = -6$



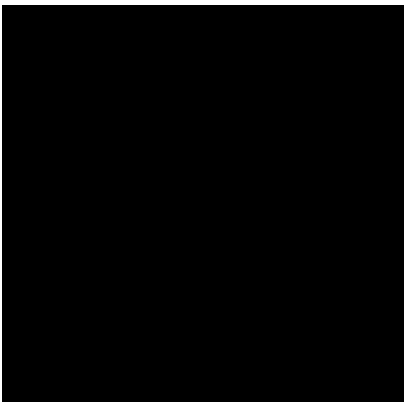
A)



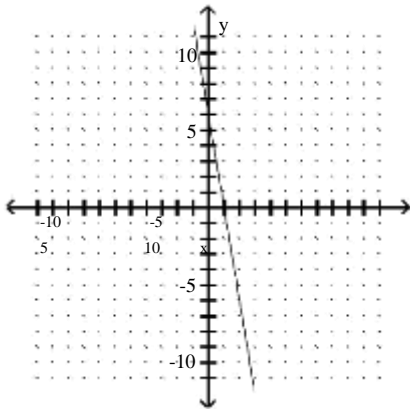
B)



C)



D)

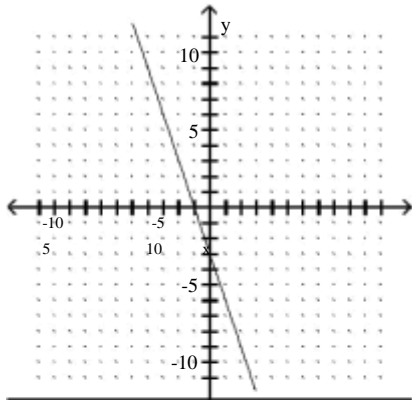


Answer: D

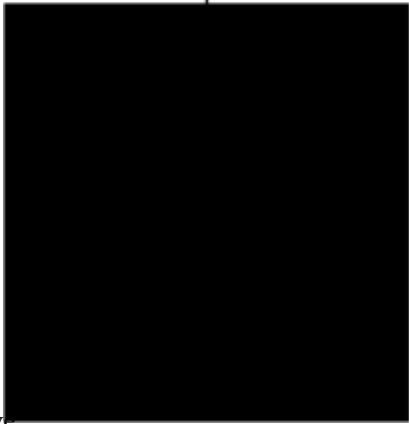
123) Through $(9, 0)$, $m = -\frac{1}{3}$

3





C)

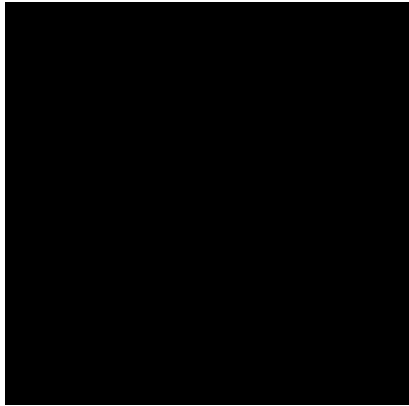


D)

Answer

124) Through $(0, 2)$, $m = -\frac{1}{5}$

5

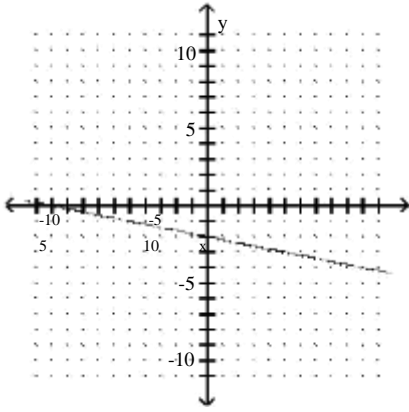


A)

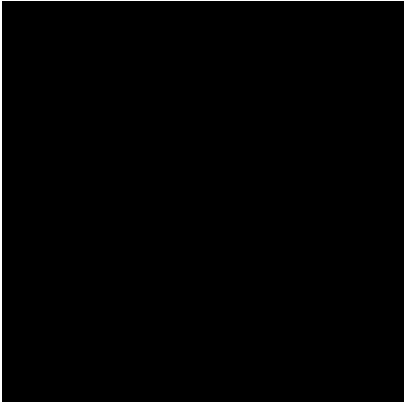
y



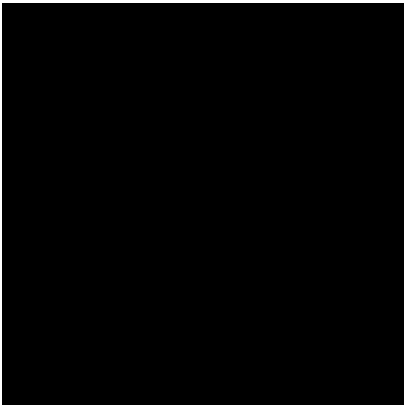
B)



C)

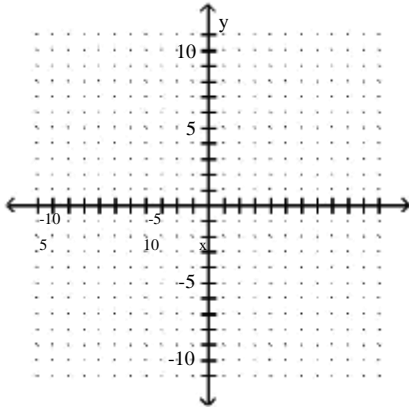


D)



Answer: C

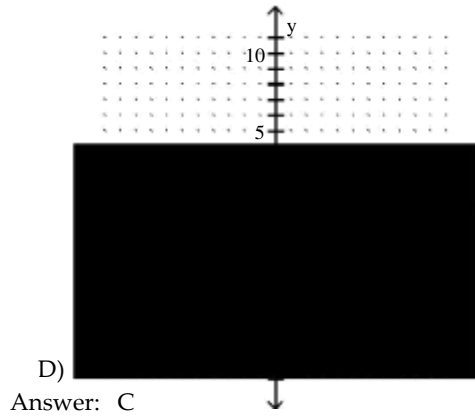
125) Through $(-2, -2)$, $m = 2$



A)

B)

C)



126) Through (2, 6), $m = \frac{8}{3}$

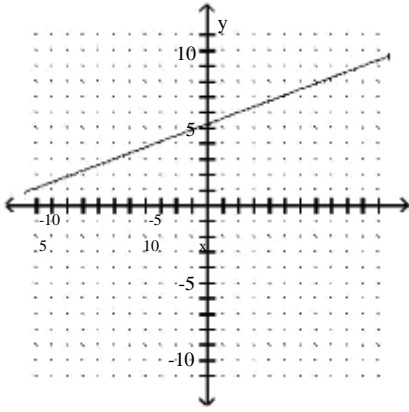
3



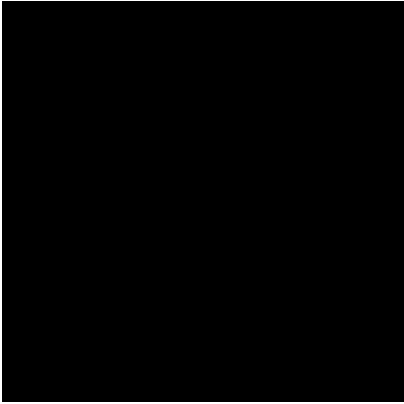
A)



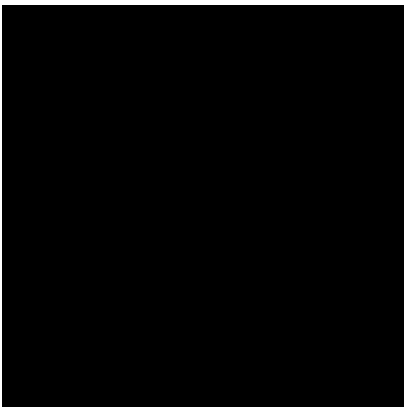
B)



C)

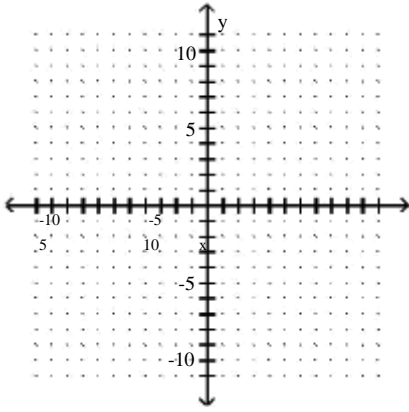


D)



Answer: A

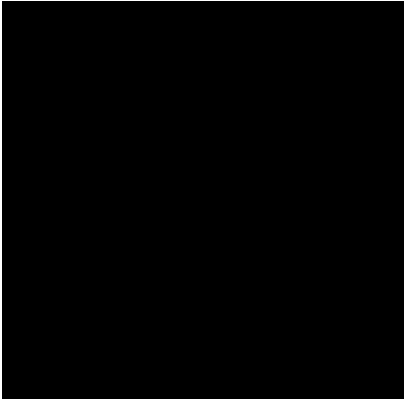
127) Through $(-4, -5)$, $m = 1$



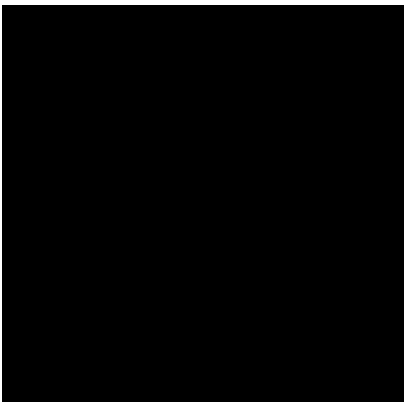
A)



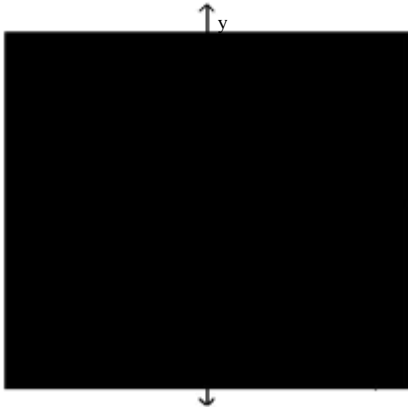
B)



C)



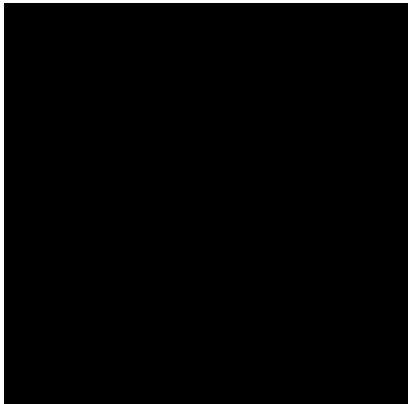
D)



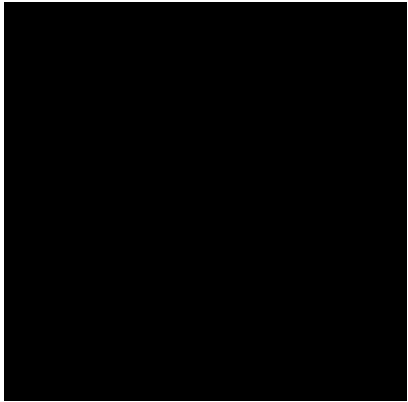
Answer: B

128) Through $(-5, -4)$, $m = -\frac{2}{3}$

2



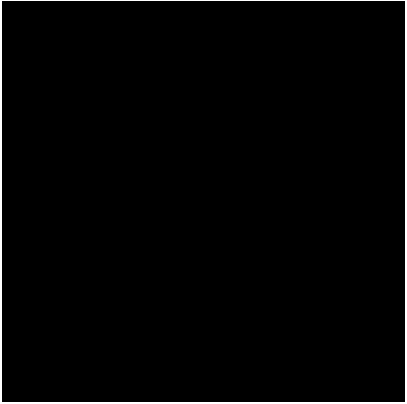
A)



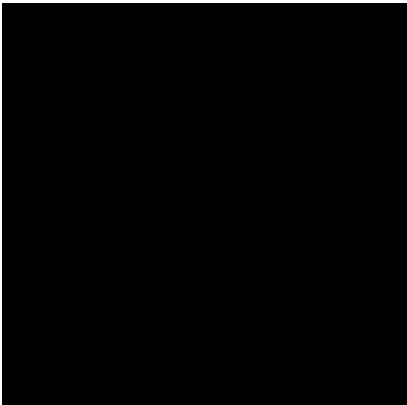
B)



C)

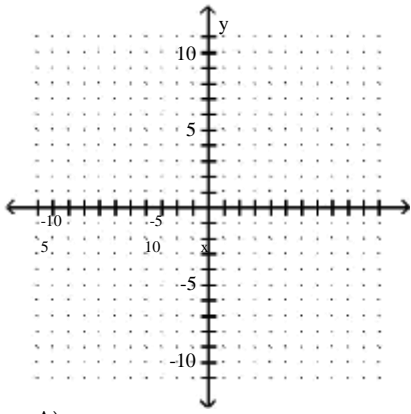


D)



Answer: D

129) Through $(-2, -6)$, $m = 0$



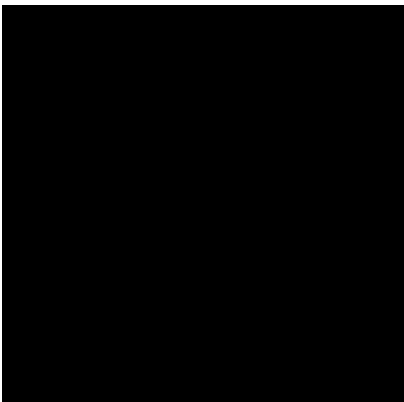
A)



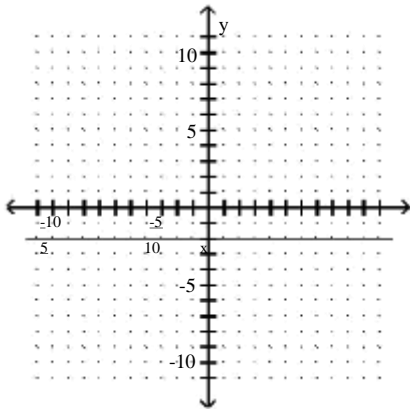
B)



C)

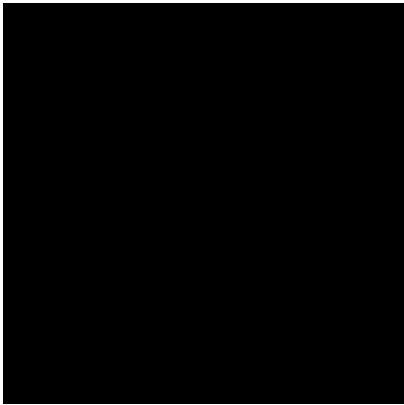


D)



Answer: C

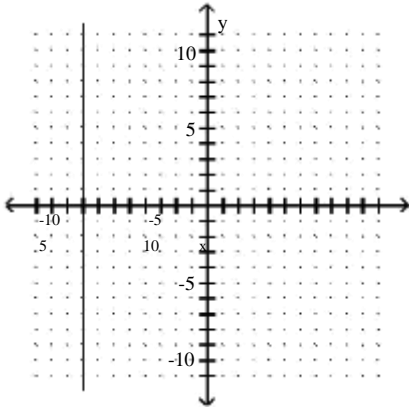
130) Through $(-6, -8)$, m is undefined.



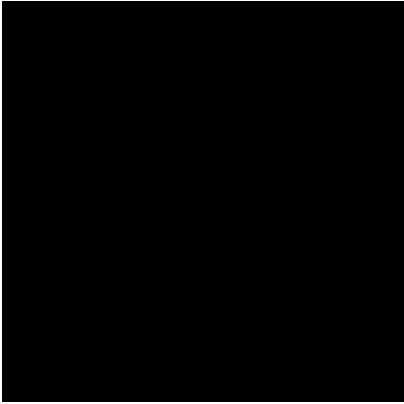
A)



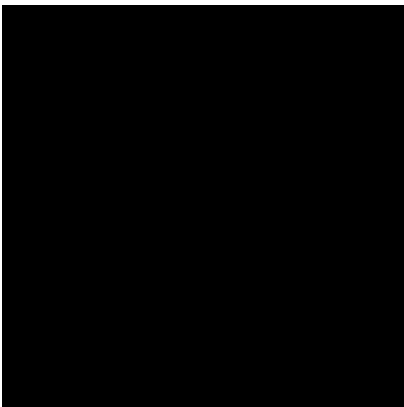
B)



C)



D)



Answer:
B

Find an equation in slope-intercept form for the nonvertical lines. Write the vertical lines in the form $x = h$.

131) Passing through (2, 5) and (0, -6)

A) $y = 2x - 6$

B) $y = -2x - 6$

C) $y = \frac{11}{2}x - 6$

D) $y = -2x - 6$

Answer: C

132) Passing through (4, 0) and (-8, 7)

A) $y = -15x + \frac{15}{7}$

B) $y = -12x + \frac{7}{3}$

C) $y = \frac{4}{15}x + \frac{23}{15}$

D) $y = 12x + \frac{7}{3}$

Answer: B

133) Passing through (-6, -3) and (1, 8)

A) $y = 7x + \frac{3}{7}$

B) $y = -7x + \frac{11}{7}$

C) $y = \frac{11}{7}x + 7$

D) $y = -7x + \frac{3}{7}$

Answer: C

134) Passing through (4, -8) and (-3, 9)

A) $y = 1x + 6$

B) $y = \frac{17}{12}x + 7$

C) $y = -1x + 6$

D) $y = -\frac{17}{12}x + \frac{17}{2}$

Answer: D

135) Passing through (-4, 6) and (4, 6)

- A) $y = 3x + 4$
- B) $y = 14x + 48$
- C) $y = 2x + 0$
- D) $y = 6$

Answer: D

136) Passing through (-2, 5) and (-2, -5)

- A) $x = -2$
- B) $y = -2$
- C) $y = 5$
- D) $x = 5$

Answer: A

Use the given conditions to find an equation in slope-intercept form of each of the nonvertical lines. Write vertical lines in the form $x = h$.

137) A vertical line through (0.02, 2.19)

- A) $y = 2.19$
- B) $y = 0.02$
- C) $x = 2.19$
- D) $x = 0.02$

Answer: D

138) A horizontal line through (-6.24, -0.88)

- A) $x = -0.88$
- B) $x = -6.24$
- C) $y = -0.88$
- D) $y = -6.24$

Answer: C

139) $m = \frac{7}{5}$; y-intercept = -3

- A) $y = \frac{7}{5}x - 3$
- B) $y = -\frac{7}{5}x - 3$
- C) $y = \frac{7}{5}x + 3$
- D) $y = -\frac{7}{5}x + 3$

Answer: A

140) $m = -\frac{3}{7}$; y-intercept = 4

A) $y = 7x + 4$

B) $y = -7x - 4$

C) $y = -7x + 4$

D) $y = 7x - 4$

Answer: C

141) y-intercept -36; x-intercept 28

A) $y = 7x - 36$

B) $y = -7x - 36$

C) $y = 9x - 36$

D) $y = 7x + 36$

Answer: A

142) Perpendicular to $x = 1$; passing through $(-4, 6)$

A) $x = -4$

B) $6x - 4y = 0$

C) $-4x + 6y = 0$

D) $y = 6$

Answer: D

143) Parallel to $x = -4$; passing through $(3, 7)$

A) $x = 3$

B) $y = -4$

C) $x = 7$

D) $y = 7$

Answer: A

144) Parallel to $y = 0$; passing through $(2, 7)$

A) $x = 2$

B) $y = 7$

C) $x = -7$

D) $y = -2$

Answer: B

145) Parallel to $-4x - 3y = 1$; passing through $(2, 4)$

A) $y = 3x - 3\frac{2}{1}$

B) $y = -4x - 1\frac{3}{1}$

C) $y = -3x + \frac{4}{20}$

D) $y = 3x - \frac{4}{20}$

Answer: C

146) Perpendicular to $-4x + 7y = 39$; passing through $(6, 9)$

A) $y = -4x + \frac{7}{39}$

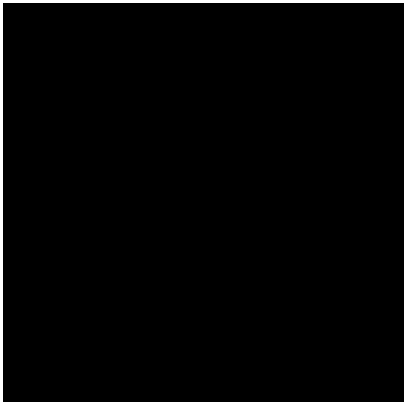
B) $y = 4x - \frac{7}{39}$

C) $y = -7x + \frac{4}{78}$

D) $y = -\frac{7}{4}x$

Answer: A

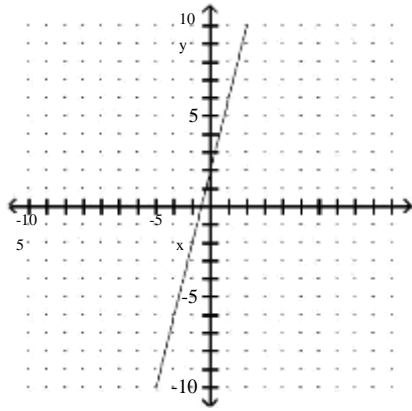
Find the slope and the y-intercept from the equation of the line. Sketch a graph of the equation. 147) $y = 2x - 4$



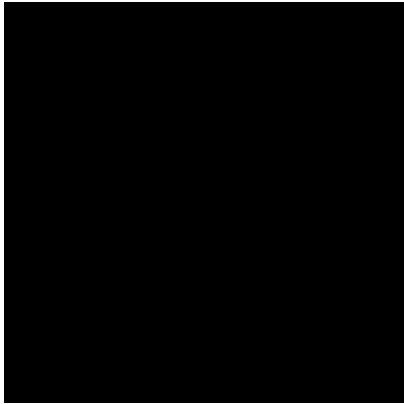
A) $m = 2$, y-intercept = 4



B) $m = 4$, y-intercept = 2



C) $m = 2$, y-intercept = -4

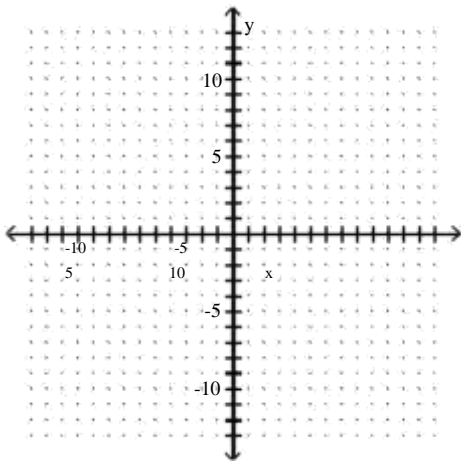


D) $m = 4$, y-intercept = 2

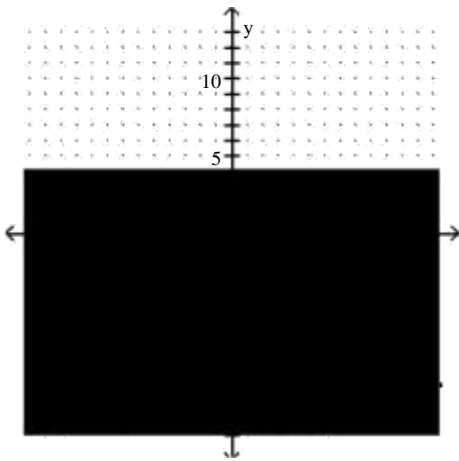


Answer

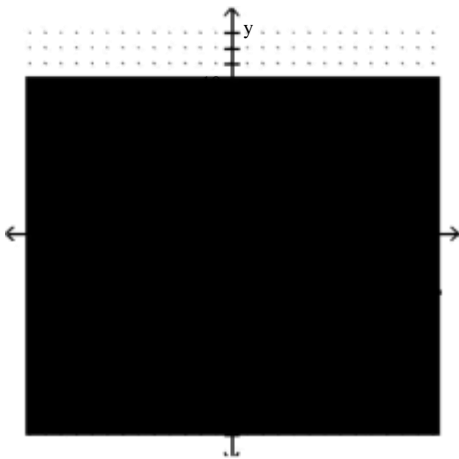
148) $y = -\frac{1}{2}x + 3$



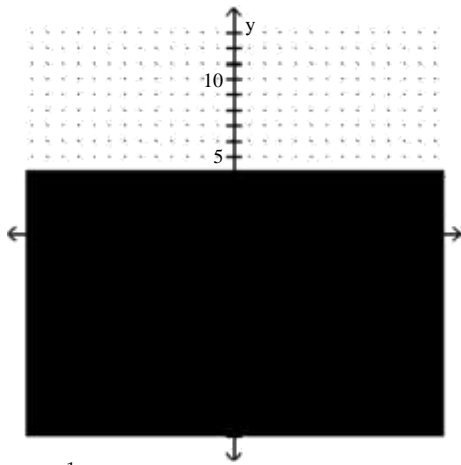
A) $m = -\frac{1}{2}$; y-intercept = -3



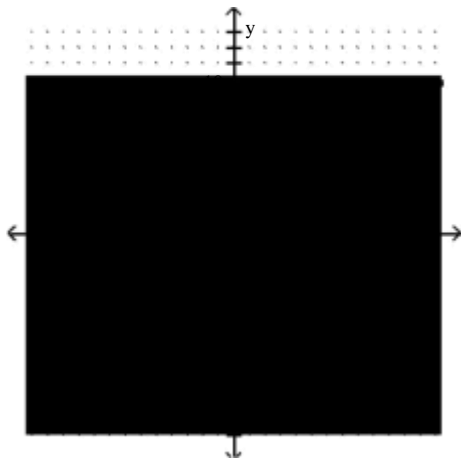
B) $m = -\frac{1}{2}$; y-intercept = 3



C) $m = \frac{1}{2}$; y-intercept = -3

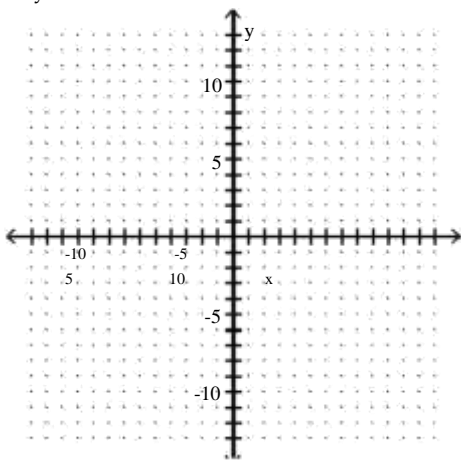


D) $m = \frac{1}{2}$; y-intercept = 3

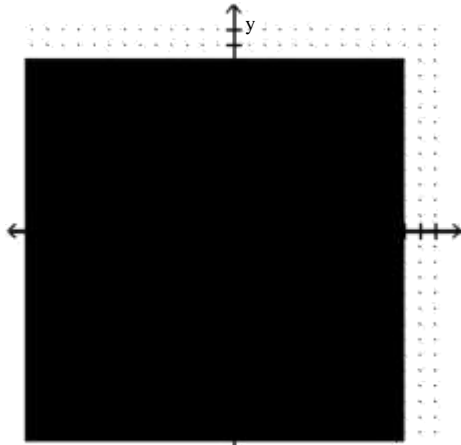


Answer: B

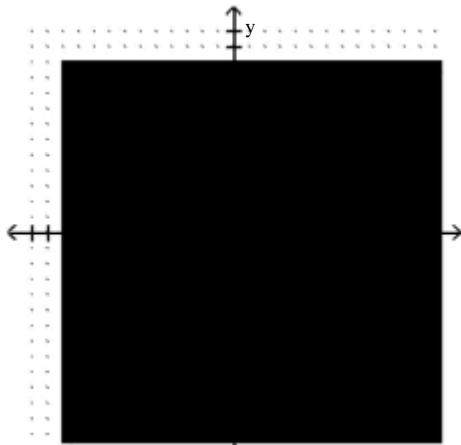
149) $x + y = -3$



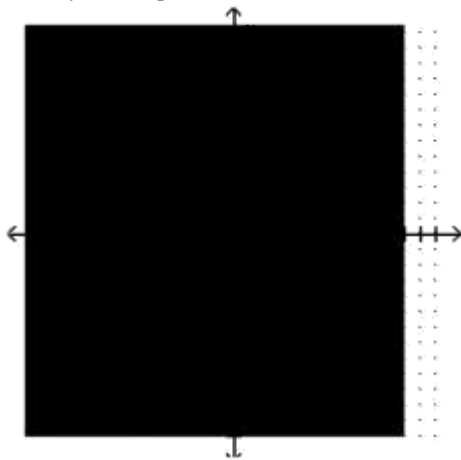
A) $m = -1$; y-intercept = -3



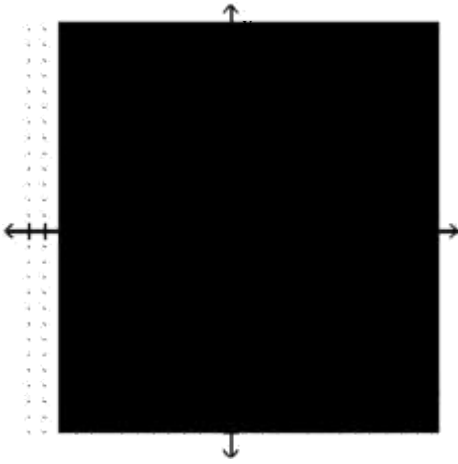
B) $m = 1$; y-intercept = -3



C) $m = 1$; y-intercept = 3



D) $m = -1$; y-intercept = 3

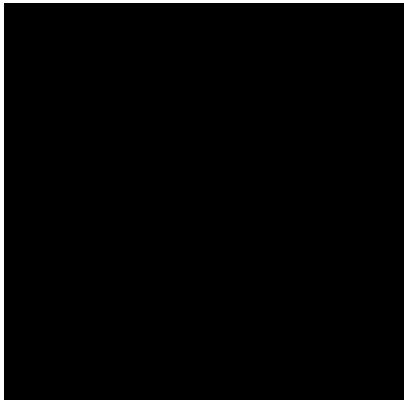


Answer: A

150) $2x + 5y = 24$



A) $m = 5$; y-intercept = $-\frac{2}{5}$

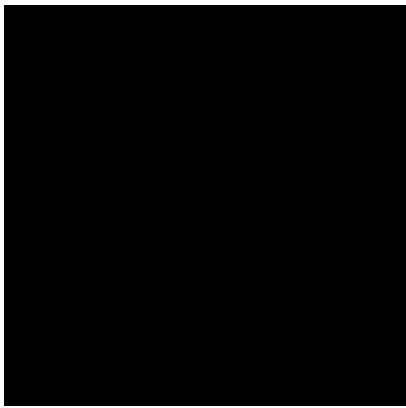


B) $m = -5$; y-intercept = $\frac{2}{5}$

24



C) $m = 5$; y-intercept = $\frac{2}{24}$

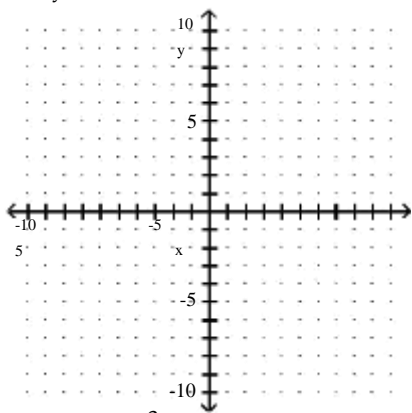


D) $m = \frac{5}{2}$; y-intercept = $\frac{14}{5}$



Answer

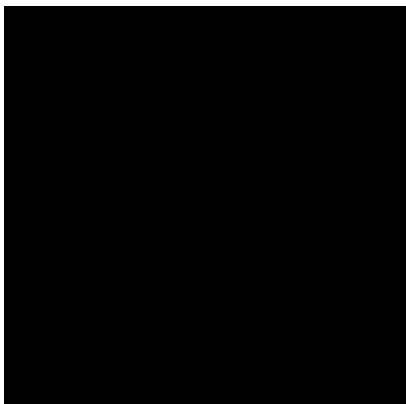
151) $3x - 4y = 14$



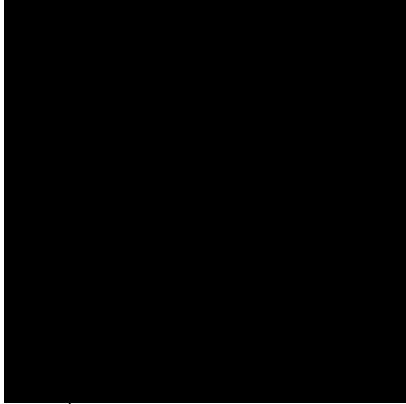
A) $m = -\frac{4}{3}$; y-intercept = $-\frac{7}{3}$



B) $m = \frac{4}{3}$; y-intercept = $-\frac{3}{2}$



C) $m = -\frac{3}{4}$; y-intercept = -2

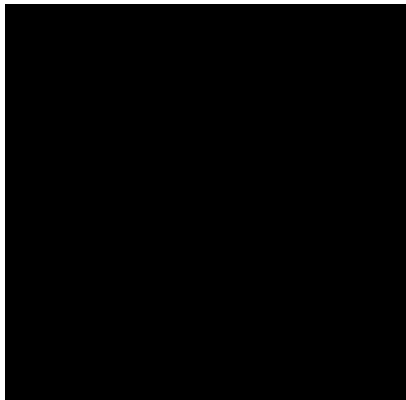


D) $m = \frac{3}{4}$; y-intercept = -2

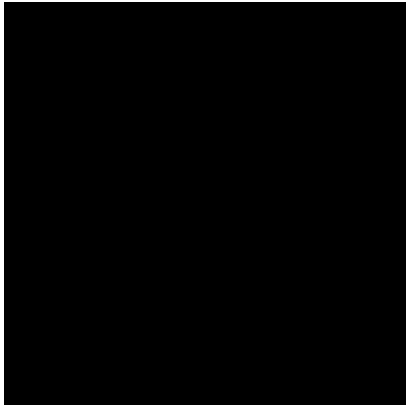


Answer

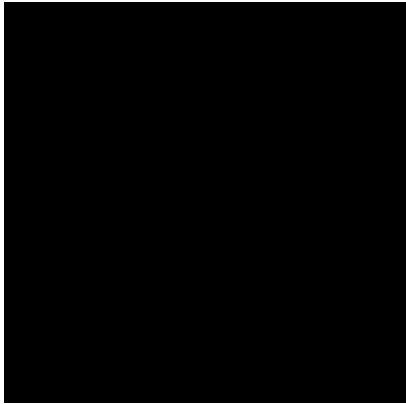
152) $3x - 5y = -35$



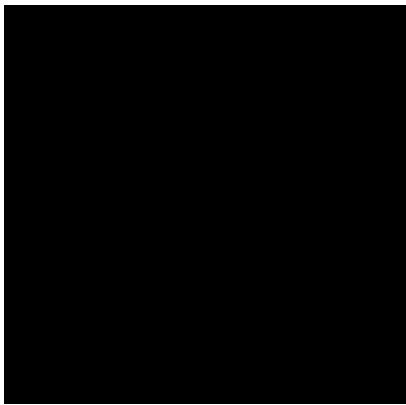
A) $m = \frac{3}{5}$; y-intercept = 7



B) $m = -\frac{3}{5}$; y-intercept = 5



C) $m = -\frac{3}{5}$; y-intercept = 7



D) $m = -\frac{5}{3}$; y-intercept = 5



Answer

153) $-5y = -3x - 19$



A) $m = \frac{5}{3}$; y-intercept = 5



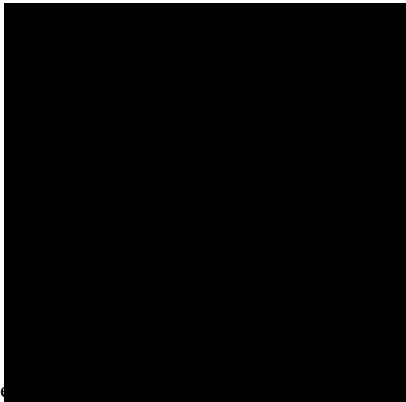
B) $m = -5$; y -intercept = 5



C) $m = 5$; y -intercept = 5

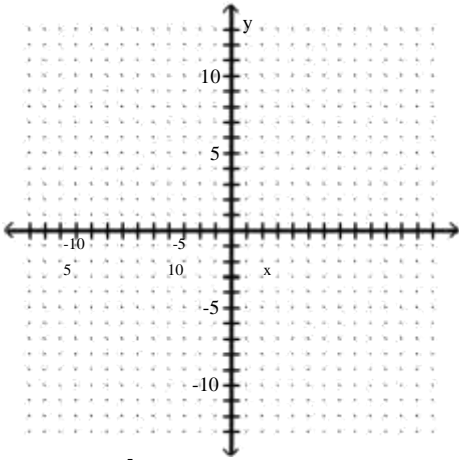


D) $m = -5$; y -intercept = 5

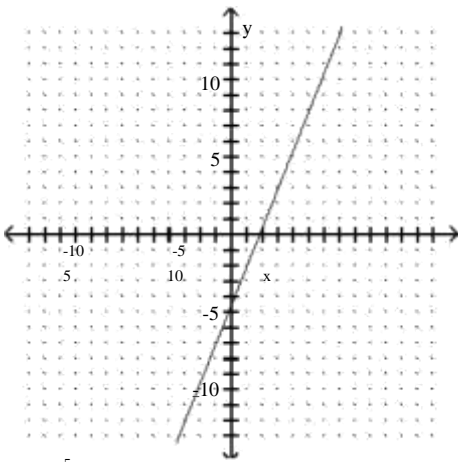


Answer

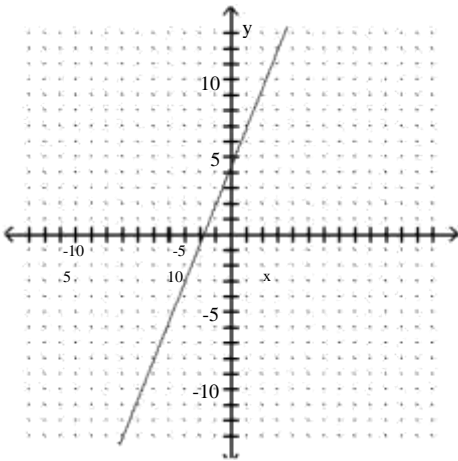
154) $5x - 2y + 9 = 0$



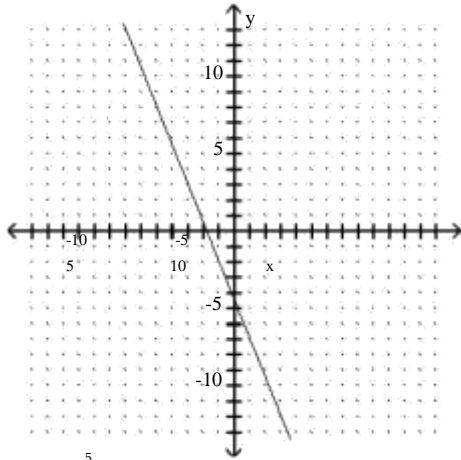
A) $m = \frac{5}{2}$; y-intercept = -2



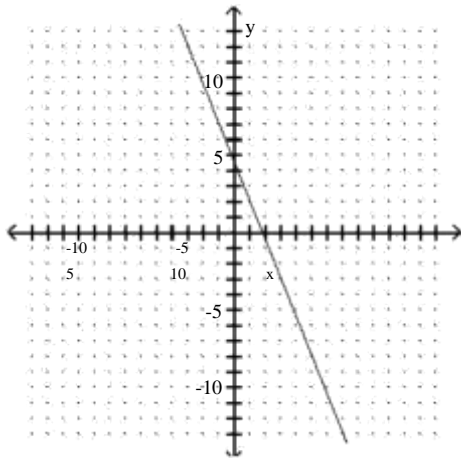
B) $m = \frac{5}{2}$; y-intercept = 2



C) $m = -\frac{5}{2}$; y-intercept = -9

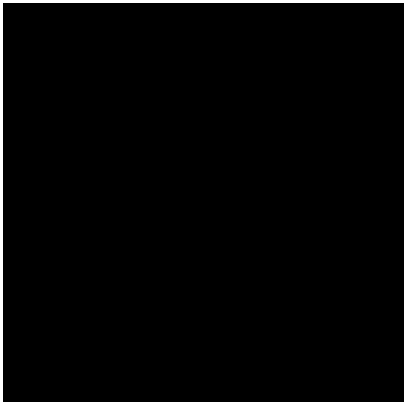


D) $m = -\frac{5}{2}$; y-intercept = 9

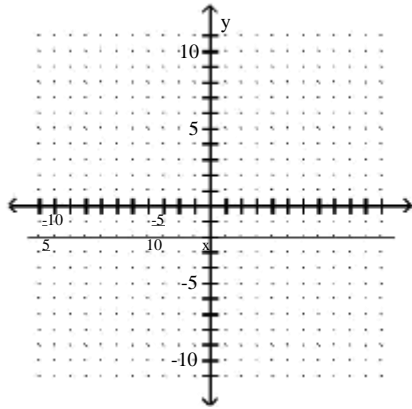


Answer: B

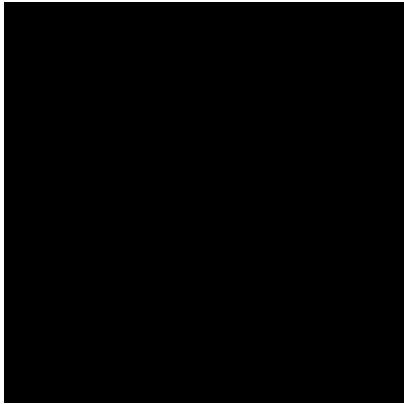
155) $y = -2$



A) $m = 0$; y-intercept = -2



B) $m = \text{undefined}$; y-intercept = -2



C) $m = \text{undefined}$; y-intercept = none

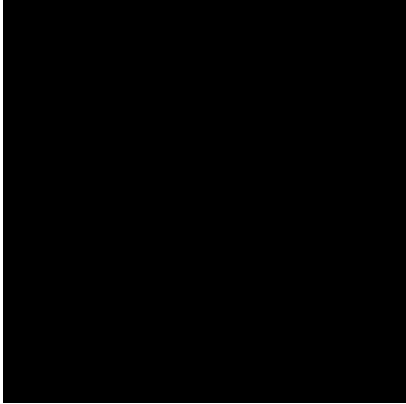


D) $m = 0$; y-intercept = none



Answer: A

156) $x = -4$



A) $m = \text{undefined}; y\text{-intercept} = \text{none}$



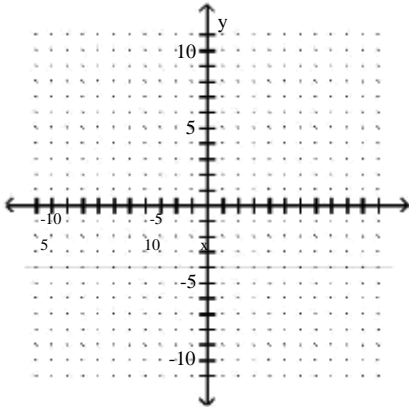
B) $m = \text{undefined}; y\text{-intercept} = \text{none}$



C) $m = -4; y\text{-intercept} = 0$



D) $m = 0$; y-intercept = -4



Answer: A

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

157) $3x - 2y = -15$

$2x + 3y = -15$

- A) Parallel
- B) Perpendicular
- C) Neither

Answer: B

158) $3x - 2y =$

-5 $2x + 3y =$

- A) Parallel
- B) Perpendicular
- C) Neither

Answer: B

159) $12x + 4y = 16$

$24x + 8y =$

- A) Parallel
- B) Perpendicular
- C) Neither

Answer: A

160) $12x + 4y = 16$

$6x + 2y =$

- A) Parallel
- B) Perpendicular
- C) Neither

Answer: A

161) $4x - 6y = -13$

$8x + 6y = -13$

- A) Parallel
- B) Perpendicular
- C) Neither

Answer: C

162) $y + 6 = -4x$
 $5y = 25x - 18$
 A) Parallel
 B) Perpendicular
 C) Neither
 Answer: C

163) $y - 9 = -x$
 $y - x = 9$
 A) Parallel
 B) Perpendicular
 C) Neither
 Answer: B

164) $y = 3 - 3.5x$
 $y = -\frac{7}{2}x - 3$
 A) Parallel
 B) Perpendicular
 C) Neither
 Answer: A

165) $y = -\frac{13}{8}x + 1$
 $y = \frac{8}{13}x + 1$
 A) Parallel
 B) Perpendicular
 C) Neither
 Answer: B

Solve the problem.

166) To convert a temperature from degrees Celsius to degrees Fahrenheit, you multiply the temperature in degrees Celsius by 1.8 and then add 32 to the result. Find a linear equation to convert from degrees Celsius to degrees Fahrenheit.
 A) $F = 1.8c + 32$
 B) $F = \frac{c - 32}{1.8}$
 C) $F = 1.8 + 32c$
 D) $F = 33.8c$
 Answer: A

167) If an object is dropped off of a tower, the velocity, V , of the object after t seconds can be obtained by multiplying t by 32 and adding 10 to the result. Find an equation relating the velocity, V , to the number of seconds, t .
 A) $V = 32t + 10$
 B) $V = 42t$
 C) $V = \frac{t - 10}{32}$
 D) $V = 32 + 10t$
 Answer: A

168) The cost for labor associated with fixing a washing machine is computed as follows: There is a fixed charge of \$30 for the repairman to come to the house, to which a charge of \$28 per hour is added. Find an equation that can be used to determine the labor cost, C , of a repair that takes x hours.

- A) $C = (30 + 28)x$
- B) $C = 28 + 30x$
- C) $C = 30 - 28x$
- D) $C = 30 + 28x$

Answer: D

169) In a certain city, the cost of a taxi ride is computed as follows: There is a fixed charge of \$2.10 as soon as you get in the taxi, to which a charge of \$2.25 per mile is added. Find an equation that can be used to determine the cost, C , of an x -mile taxi ride.

- A) $C = 2.10 + 2.25x$
- B) $C = 4.35x$
- C) $C = 2.25 + 2.10x$
- D) $C = 2.85x$

Answer: A

170) 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 \$660 to set up for production, and variable costs of \$48 per jacket. Write an equation that can be used to determine the total cost, C , encountered by Marty's Company in producing x jackets.

- A) $C = 660 + 48x$
- B) $C = (660 + 48) x$
- C) $C = 660x + 48$
- D) $C = 660 - 48x$

Answer: A

171) The average value of a certain type of automobile was \$14,880 in 1993 and depreciated to \$6120 in 1997. Let y be the average value of the automobile in the year x , where $x = 0$ represents 1993. Write a linear equation that models the value of the automobile in terms of the year x .

A) $y = -2190x - \frac{6120}{1}$

B) $y = -2190x + 6120$

C) $y = -2190x - 2640$

D) $y = -2190x + 14,880$

Answer: D

172) An investment is worth \$2140 in 1995. By 2000 it has grown to \$3640. Let y be the value of the investment in the year x , where $x = 0$ represents 1995. Write a linear equation that models the value of the investment in the year x .

A) $y = 300x + 2140$

B) $y = \frac{1}{300}x + 2140$

C) $y = -300x + 2140$

D) $y = -300x + 5140$

Answer: A

173) A faucet is used to add water to a large bottle that already contained some water. After it has been filling for 5 seconds, the gauge on the bottle indicates that it contains 29 ounces of water. After it has been filling for 12 seconds, the gauge indicates the bottle contains 64 ounces of water. Let y be the amount of water in the bottle x seconds after the faucet was turned on. Write a linear equation that models the amount of water in the bottle in terms of x .

A) $y = \frac{1}{5}x + 28$

B) $y = 5x + 4$

C) $y = -5x + 54$

D) $y = 5x + 52$

Answer: B

174) When making a telephone call using a calling card, a call lasting 6 minutes cost \$1.95. A call lasting 13 minutes cost \$3.70. Let y be the cost of making a call lasting x minutes using a calling card. Write a linear equation that models the cost of a making a call lasting x minutes.

A) $y = 4x - 20 \frac{441}{5}$

B) $y = 0.25x + 0.45$

C) $y = 0.25x - 9.3$

D) $y = -0.25x + 3.45$

Answer: B

175) A vendor has learned that, by pricing carmel apples at \$1.00, sales will reach 106 carmel apples per day. Raising the price to \$2.00 will cause the sales to fall to 54 carmel apples per day. Let y be the number of carmel apples the vendor sells at x dollars each. Write a linear equation that models the number of carmel apples sold per day when the price is x dollars each.

A) $y = -52x + 158$

B) $y = 52x + 54$

C) $y = -52x - 158$

D) $y = -52x + \frac{5511}{52}$

Answer: A

176) The cost of manufacturing a molded part is related to the quantity produced during a production run. When 100 parts are produced, the cost is \$300. When 300 parts are produced, the cost is \$1700. What is the average cost per part?

A) \$8.00 per part

B) \$7.00 per part

C) \$0.14 per part

D) \$4.67 per part

Answer: B

177) A cross-country skier reaches the 15-km mark of a race 40 min after reaching the 5-km mark. Find the speed of the skier.

A) $\frac{45}{2}$ km/hr

B) 10 km/hr

C) 10 km/hr

D) 15 km/hr

Answer: D

178) To convert a temperature from degrees Celsius to degrees Fahrenheit, you multiply the temperature in degrees Celsius by 1.8 and then add 32 to the result. Find a linear equation to convert from degrees Celsius to degrees Fahrenheit. Use this function to convert 13°C to $^{\circ}\text{F}$.

- A) 50.7°F
- B) 43.1°F
- C) 55.4°F
- D) 46.4°F

Answer: C

179) If an object is dropped from a tower, then the velocity, V (in feet per second), of the object after t seconds can be obtained by multiplying t by 32 and adding 10 to the result. Find an equation relating the velocity, V , to the number of seconds, t . Use this equation to find the velocity of the object at time $t = 1.1$ seconds.

- A) 43.2 ft/sec
- B) 46.5 ft/sec
- C) 44.5 ft/sec
- D) 45.2 ft/sec

Answer: D

180) In a certain city, the cost of a taxi ride is computed as follows: There is a fixed charge of \$2.10 as soon as you get in the taxi, to which a charge of \$1.55 per mile is added. Find an equation that can be used to determine the cost, C , of an x -mile taxi ride, and use this equation to find the cost of a 8-mile taxi ride.

- A) \$14.68
- B) \$14.50
- C) \$15.40
- D) \$14.38

Answer: B

181) 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 \$650 to set up for production, and variable costs of \$32 per jacket. Write an equation that can be used to determine the total cost, C , encountered by Marty's Company in producing x jackets, and use the equation to find the total cost of producing 144 jackets.

- A) \$5238
- B) \$5258
- C) \$5250
- D) \$5270

Answer: B

182) The cost of owning a home includes both fixed costs and variable utility costs. Assume that it costs \$1721 per month for mortgage and insurance payments and it costs an average of \$1.20 per unit for natural gas, electricity, and water usage. (i) Determine a linear function that computes the annual cost of owning this home if x utility units are used.

(ii) What does the y -intercept on the graph of the function represent?

- A) $y = 1.20x + 20,652$; y -intercept, 20,652, represents the minimum cost of owning the home for 12 months without spending anything on utilities.
- B) $y = 1.20x + 1721$; y -intercept, 1721, represents the minimum cost of owning the home without spending anything on utilities.
- C) $y = -1.20x + 1721$; y -intercept, 1721, represents the minimum cost of owning the home without spending anything on utilities.
- D) $y = -1.20x + 20,652$; y -intercept, 20,652, represents the minimum cost of owning the home for 12 months without spending anything on utilities.

Answer: A

Provide an appropriate response.

- 183) In the linear equation, $y = mx + b$, b is the ? ____ of the equation. A) domain
B) y-intercept
C) x-intercept
D) slope

Answer: B

- 184) In the linear equation, $y = mx + b$, m is the ? ____ of the equation. A) y-intercept
B) slope
C) x-intercept
D) range

Answer: B

- 185) In the linear equation, $y = -10 - 9x$, -10 is the ? ____ of the equation. A) slope
B) y-intercept
C) x-intercept
D) domain

Answer: B

- 186) If the y-intercept of the linear equation $y = 4x + b$ lies below the x-axis, then what can you say about b ? A) $b > 0$
B) $b = 0$
C) $b < 0$
D) $b = 0$

Answer: C

- 187) If $m > 0$, the graph of $y = mx + b$? ____ . A) is a horizontal line
B) slopes upward to the right
C) is very steep
D) is somewhat flat

Answer: B

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

A) $x = \frac{y-b}{m}$ -

B) $x = \frac{y+b}{m}$ -

C) $x = \frac{my-b}{b}$ -

D) $x = y - mx - b$

Answer: A

189) A line passes through the points (2, 5) and (2, 10). The equation of this line is _____. The slope of the line is _____.

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

Answer: A

190) A line passes through the points (8, 3) and (1, 3). The equation of this line is _____. The slope of the line is _____.

- A) $x = 3$; undefined
- B) $y = 3$; undefined
- C) $y = 3$; 0
- D) $x = 3$; 0

Answer: C

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

191) Can an equation of a vertical line be written in slope-intercept form? Explain.

Answer: No. In the slope-intercept form of the equation of a line, x is multiplied by slope; however, the slope of a vertical line is undefined. (Explanations will vary.)

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

Determine the domain and range of the relation. State whether the relation is a function or not a function. 192)



- A) domain: {20, 35, 50, 65}
range: {4, 7, 10, 13}
not a function
- B) domain: {4, 7, 10, 13}
range: {20, 35, 50, 65}
function
- C) domain: {20, 35, 50, 65}
range: {4, 7, 10, 13}
function
- D) domain: {4, 7, 10, 13}
range: {20, 35, 50, 65}
not a function

Answer:
B

193)



- A) domain: {snake, cat, dog}
range: {Alice, Brad, Carl} function
- B) domain: {Alice, Brad, Carl}
range: {snake, cat, dog}
not a function
- C) domain: {snake, cat, dog}
range: {Alice, Brad, Carl}
not a function
- D) domain: {Alice, Brad, Carl}
range: {snake, cat, dog}
function

Answer: B

194)



- A) domain: {Ms. Lee, Mr. Bar}
range: {Bob, Ann, Dave}
not a function
- B) domain: {Bob, Ann, Dave}
range: {Ms. Lee, Mr. Bar}
function
- C) domain: {Bob, Ann, Dave}
range: {Ms. Lee, Mr. Bar}
not a function
- D) domain: {Ms. Lee, Mr. Bar}
range: {Bob, Ann, Dave}
function

Answer:

B

- 195)

x	3	8	3	4
y	4	8	3	1
- A) domain: {3, 1, 8, 4}
range: {3, 4, 8}
not a function
- B) domain: {3, 1, 8, 4}
range: {3, 4, 8}
function
- C) domain: {3, 4, 8}
range: {3, 1, 8, 4}
not a function
- D) domain: {3, 4, 8}
range: {3, 1, 8, 4}
function

Answer: C

- 196)

x	-2	-1	1	2
y	1	7	1	7
- A) domain: {1, 7}
range: {-2, -1, 1, 2}
not a function
- B) domain: {-2, -1, 1, 2}
range: {1, 7}
function
- C) domain: {-2, -1, 1, 2}
range: {1, 7}
not a function
- D) domain: {1, 7}
range: {-2, -1, 1, 2}
function

Answer: B

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

197) $y = 5x - 8$

- A) Yes
B) No

Answer: A

198) $7x = 4 - 5y$

- A) Yes
B) No

Answer: A

199) $y = x^2 + 4$

- A) Yes
B) No

Answer: A

200) $y = 2x^2 - 5x + 5$

A) Yes

B) No

Answer: A

201) $x = y^3$

A) Yes

B) No

Answer: A

202) $x = y^2 + 1$

A) Yes

B) No

Answer: B

203) $x = \frac{1}{3}y$

A) Yes

B) No

Answer: B

204) $y^2 = 3x$

A) Yes

B) No

Answer: B

205) $y = \sqrt{2x - 6}$

A) Yes

B) No

Answer: A

206) $xy = 7$

A) Yes

B) No

Answer: A

Find the function value.

207) Let $f(x) = x^2 + 4x - 1$. Find $f(-3)$.

A) 22

B) 20

C) -2

D) -4

Answer: D

208) Let $f(x) = \frac{x}{11-x}$. Find $f \left(\begin{matrix} 1 \\ 5 \end{matrix} \right)$.

A) 56

B) $\frac{1}{56}$

C) $56 \frac{1}{56}$

D) - 56

Answer: C

209) Let $g(x) = \frac{x-3}{+7}$. Find $g(-10.25)$.

A) 1

B) $\frac{29}{69}$

C) $\frac{53}{13}$

D) $-\frac{29}{69}$

Answer: C

210) Let $g(x) = \sqrt{\frac{x}{4-x^2}}$. Find $g(0)$.

A) 1

B) 4

C) does not exist

D) 0

Answer: D

211) Let $f(x) = 5x^2 - 3x + 6$. Find $f(-x)$.

A) $-5x^2 + 4x + 6$

B) $4x^2 + 4x + 5$

C) $5x^2 + 3x + 6$

D) $-5x^2 + 3x - 6$

Answer: C

212) Let $g(x) = 3x^3$. Find $g(2+h)$.

A) $24 - 36h + 12h^2 - 3h^3$

B) $24 + 36h + 18h^2 + 3h^3$

C) $-24 + 36h - 9h^2 + h^3$

D) $8 + 12h + 18h^2 + 4h^3$

Answer: B

213) Let $f(x) = 2x + 3$. Find $f(4y)$.

A) $4y + 4y$

B) $8y + 12y$

C) $2y + 3y$

D) $7y + 14y$

Answer: B

214) Let $h(x) = 2x - x^2 - 3$. Find $h(x)$.

A) $2x - x^2 - 3$

B) $-2x + x^2 - 3$

C) $-2x - x^2 - 3$

D) $-2x - 3 - x^2$

Answer: C

Find the domain of the function.

215) $f(x) = 3x - 7$

A) $(-8, 8)$

B) $(-8, 0) \cup (0, 8)$

C) $(7, 8)$

D) $(0, 8)$

Answer: A

216) $f(x) = \frac{x}{x - 8}$

A) $(0, 8)$

B) $(-8, 0)$

C) $(-8, -8) \cup (-8, 8)$

D) $(-8, 8) \cup (8, 8)$

Answer: D

217) $f(x) = \frac{5}{x + 4}$

A) $(-8, 8)$

B) $(-8, 4)$

C) $(-8, 0) \cup (0, 8)$

D) $(-8, -4) \cup (-4, 8)$

Answer: D

218) $f(x) = \frac{1}{x^2 + 4x - 12}$

A) $(-8, -6) \cup (-6, 2) \cup (2, 8)$

B) $(-8, 2) \cup (2, 8)$

C) $(-8, 8)$

D) $(-8, -6) \cup (-6, 8)$

Answer: A

219) $f(x) = \frac{x^4 - 2x^3 + 4}{3x^2 - 16x - 35}$

- A) $(-8, 7) \cup (7, 8)$
- B) $(-8, -3) \cup (-3, 7) \cup (7, 8)$
- C) $(-8, -3) \cup (-3, 8)$
- D) $(-8, -7) \cup (-7, 8)$

Answer: B

220) $f(x) = \frac{\sqrt{x-17}}{x-\sqrt{17}}$

- A) $(17, 8)$
- B) $([-8, 17], 17) \cup (17, 8)$
- C) $(-8, 8)$
- D) $(-8, 8)$

Answer: B

221) $f(x) = \frac{(x+4)(x-4)}{x^2 - 16}$

- A) $(-8, 16) \cup (16, 8)$
- B) $(16, 8)$
- C) $(-8, 8)$
- D) $(-8, -4) \cup (-4, 4) \cup (4, 8)$

Answer: D

222) $f(x) = \frac{(x+2)(x-2)}{x^2 + 4}$

- A) $(-8, -2) \cup (-2, 2) \cup (2, 8)$
- B) $(-8, 8)$
- C) $(4, 8)$
- D) $(-8, 4) \cup (4, 8)$

Answer: B

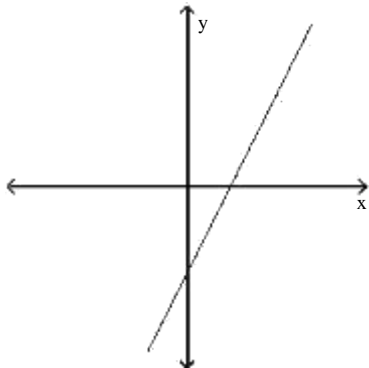
223) $H(x) = \frac{x}{\sqrt{x-10}}$

- A) $(10, 8)$
- B) $(-8, 8)$
- C) $(-8, 10) \cup (10, 8)$
- D) $[10, 8)$

Answer: A

Use the vertical-line test to determine whether the graph represents a function.

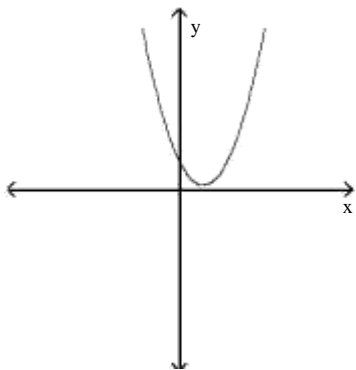
224)



- A) Yes
- B) No

Answer: A

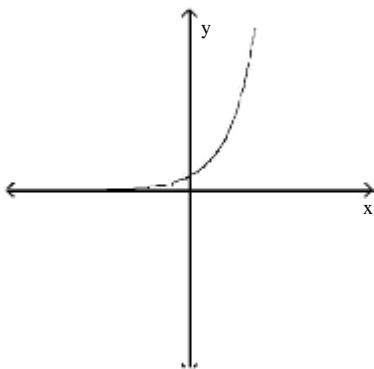
225)



- A) Yes
- B) No

Answer: A

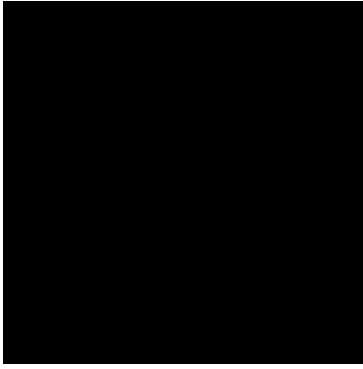
226)



- A) Yes
- B) No

Answer: A

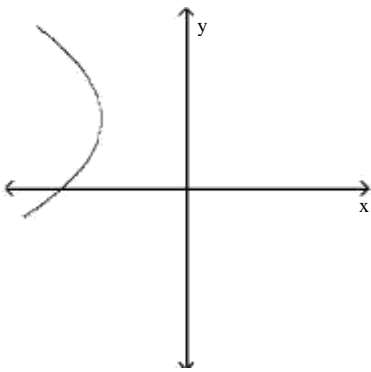
227)



- A) Yes
- B) No

Answer: A

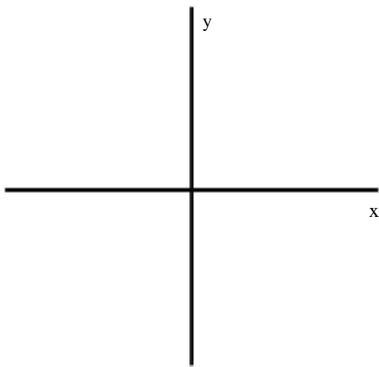
228)



- A) Yes
- B) No

Answer: B

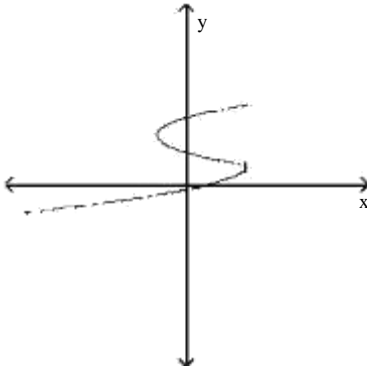
229)



- A) Yes
- B) No

Answer:
B

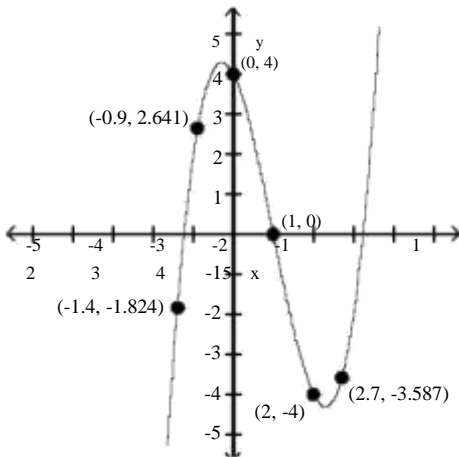
230)



- A) Yes
- B) No

Answer: B

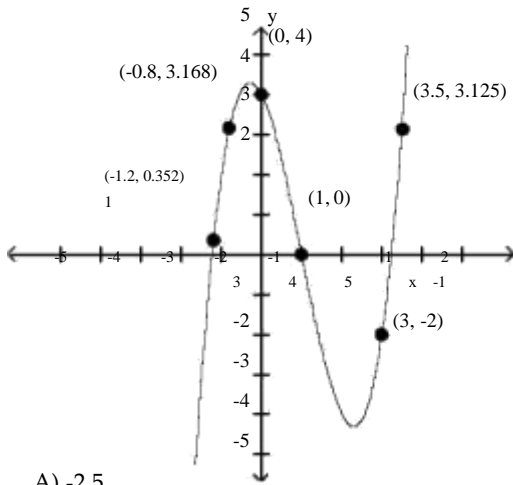
The graph of a function is given. Find the indicated function value. 231) $f(2)$



- A) -1.34
- B) -4
- C) 2.1
- D) 1

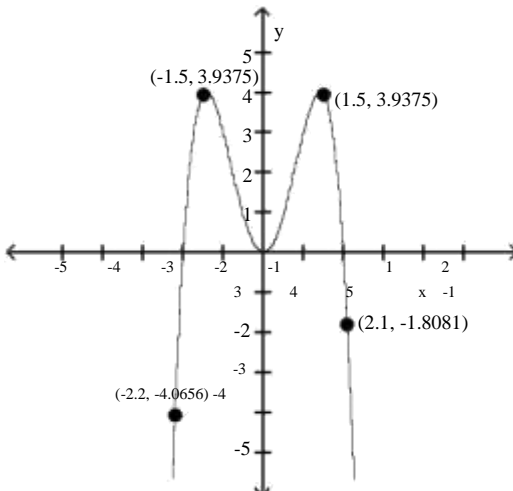
Answer: B

232) $g(3)$



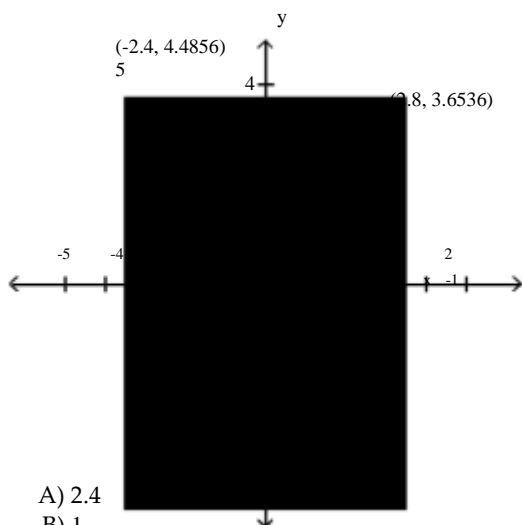
- A) -2.5
 - B) 4.238
 - C) -2
 - D) 3
- Answer: C

233) $g(-2.2)$



- A) -4.0656
 - B) 1.5
 - C) 2.2
 - D) -1.8081
- Answer: A

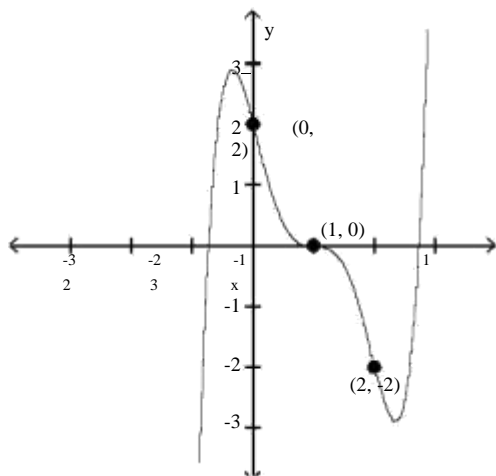
234) $g(-2.4)$



- A) 2.4
- B) 1
- C) -1.75
- D) 4.4856

Answer: D

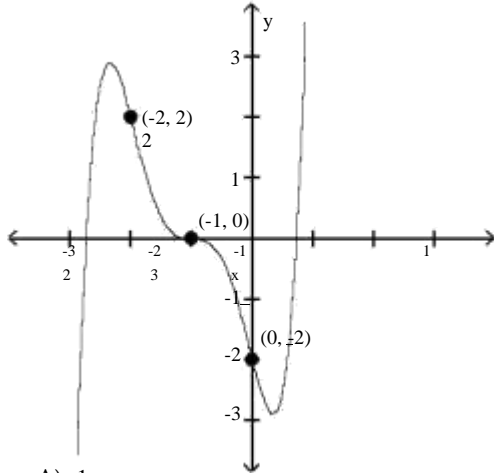
235) $f(1)$



- A) -2
- B) 2
- C) 1
- D) 0

Answer: D

236) $g(0)$



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

Answer: D

Solve the problem.

237) Let $g(x) = x^2 - 2x - 27$. Find x such that $(x, 8)$ is on the graph of $f(x)$.

- A) $x = -5$ or 7
- B) no solution
- C) $x = 7$
- D) $x = -7$ or 5

Answer: A

238) Let $h(x) = x^2 + 2x + 8$. Find x such that $(x, 3)$ is on the graph of $h(x)$. A)

- A) $x = -2 \pm 3\sqrt{2}$
- B) $x = 2 \pm 2\sqrt{2}$
- C) $x = 0$
- D) no solution

Answer: D

239) Let $f(x) = 2(x - 4)^2 + 10$. Find x such that $(x, 14)$ is on the graph of $f(x)$. A)

- A) $x = -4 \pm 2\sqrt{3}$
- B) no solution
- C) $x = 4 \pm 2\sqrt{3}$
- D) $x = 4 \pm \sqrt{2}$

Answer: D

240) Let $H(x) = 2x^2 - 12x$. Find x such that $(x, -18)$ is on the graph of $H(x)$. A)

- A) $x = \pm 3$
- B) $x = -3$
- C) $x = 3$
- D) no solution

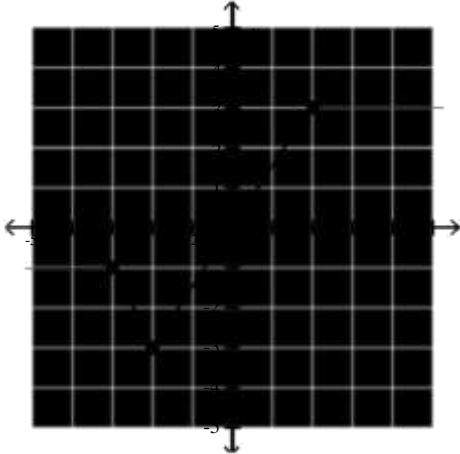
Answer: C

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

Use the graph of the function to find the following:

- the domain and range of the function;
- the intercepts, if any;
- the indicated function values; and
- the value of x given the function value.

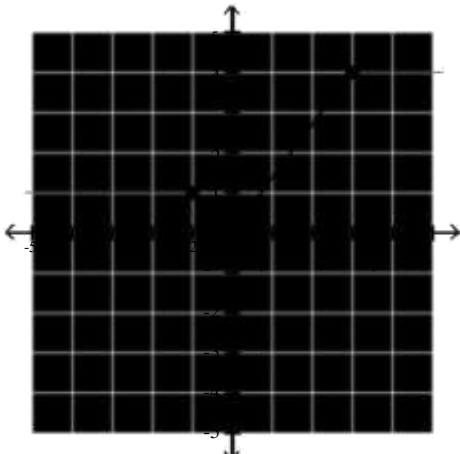
241)



- Find $f(-4)$, $f(-2)$, and $f(2)$.
- Solve $f(x) = 3$.

Answer: a. Domain: $(-8, 8)$; Range: $[-3, 3]$ b
 x-intercept: 0; y-intercept: 0 c.
 $f(-4) = -1$, $f(-2) = -3$, $f(2) = 3$
 d. $[2, 8)$

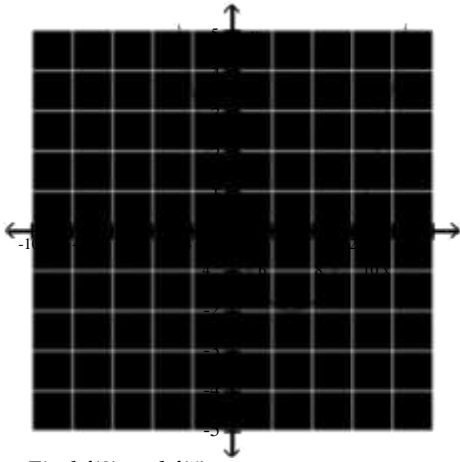
242)



- Find $f(-4)$, $f(0)$, and $f(4)$.
- Solve $f(x) = -2$.

Answer: a. Domain: $(-8, 8)$; Range: $[0, 4]$
 b. x-intercept: 0; y-intercept: 0
 c. $f(-4) = 1$, $f(0) = 0$, $f(4) = 4$
 d. \emptyset

243)

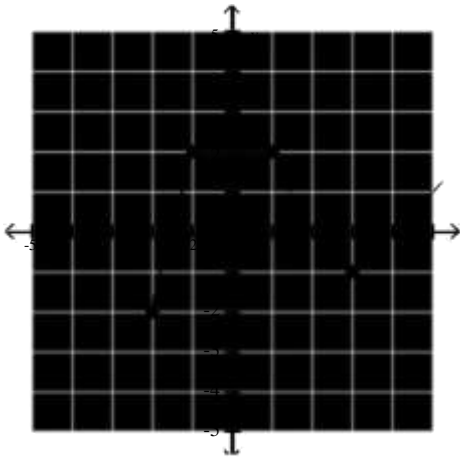


c. Find $f(0)$ and $f(6)$.

d. Solve $f(x) = -4$.

Answer: a. Domain: $(-\infty, \infty)$; Range: $[-2, \infty)$
b. x-intercepts: 0, 6; y-intercept: 0
c. $f(0) = 0, f(6) = 0$
d. \emptyset

244)

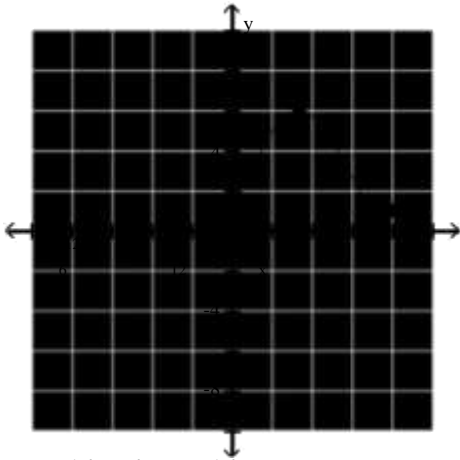


c. Find $f(-2)$, $f(1)$, and $f(3)$.

d. Solve $f(x) = 2$.

Answer: a. Domain: $[-2, \infty)$; Range: $[-2, \infty)$
b. x-intercepts: $-\frac{3}{2}, 2, 4$; y-intercept: 2
c. $f(-2) = -2, f(1) = 2, f(3) = -1$
d. $[-1, 1]$

245)



- c. Find $f(0)$, $f(1)$, and $f(12)$.
- d. Solve $f(x) = 6$.

Answer: a. Domain: $[0, 12]$; Range: $[1:6]$
b. x-intercept: none; y-intercept: 1 c
 $f(0) = 1$, $f(1) = 2$, $f(12) = 1$
d. $\{5\}$

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

State whether the given relation is a function.

- 246) Consider the relation whose domain is all students attending Laughlin Community College and whose range values are a set of the students' Social Security numbers. Is this relation a function? A)

Yes

B) No

Answer: A

- 247) Consider a relation whose domain is all students attending the University of Ohio and whose range values are a set of each students' teachers. Is this relation a function?

A) Yes

B) No

Answer: B

- 248) Is a function generated in the process of choosing teams from a group of 32 students by counting them off in fours; for example: "1, 2, 3, 4, 1, 2, 3, 4, 1, 2, ..."?

A) Yes

B) No

Answer: B

Solve the problem.

- 249) A formula relating an athlete's vertical leap V , in inches, to hang time t , in seconds, is $V(t) = 48t^2$. A professional basketball player has a vertical leap of 40 inches. What is his hang time? Round your answer to the nearest tenth of a second.

A) 0.6 sec

B) 1 sec

C) 0.9 sec

D) 0.8 sec

Answer: C

250) A stone thrown downward with an initial velocity of 34.3 m/sec will travel a distance of s meters, where

$s(t) = 4.9t^2 + 34.3t$ and t is in seconds. If a stone is thrown downward at 34.3 m/sec from a height of 294 m, how long will it take the stone to hit the ground? Round your answer to the nearest second.

- A) 17 sec
- B) 12 sec
- C) 5 sec
- D) 7 sec

Answer: C

251) If there are x teams in a sports league and all the teams play each other twice, a total of $N(x)$ games are played, where $N(x) = x^2 - x$. A soccer league has 10 teams, each of which plays the others twice. If the league pays \$44 per game for the field and officials, how much will it cost to play the entire schedule?

- A) \$4048
- B) \$3960
- C) \$4400
- D) \$4840

Answer: B

252) Under certain conditions, the power P , in watts per hour, generated by a windmill with winds blowing v miles per hour is given by $P(v) = 0.015v^3$. Find the power generated by 18-mph winds.

- A) 5832 watts per hr
- B) 87.48 watts per hr
- C) 0.00006075 watts per hr
- D) 4.86 watts per hr

Answer: B

253) Assume that a person's threshold weight W , defined as the weight above which the risk of death rises dramatically, is given by $W(h) = \frac{12.3}{h^3}$ where W is in pounds and h is the person's height in inches. Find the

threshold weight for a person who is 6 ft 8 in. tall. Round your answer to the nearest pound. A)

- 275.1 lb
- B) 169 lb
- C) 307.3 lb

D) 221.5 lb

Answer: A

254) The function, $S(x) = 0.0044x^4 + 0.0039x^3 + 0.0042x^2 + 0.13x + 1.5$, gives the predicted sales volume of a company, in millions of items, where x is the number of years from now. Determine the predicted sales 12 years from now. Round your answer to two decimals, if necessary.

- A) 104.77 million
- B) 86.89 million
- C) 157.76 million
- D) 101.64 million

Answer: D

255) $A(x) = -0.015x^3 + 1.05x$ gives the alcohol level in an average person's bloodstream x hours after drinking 8 oz of

100- proof whiskey. If the level exceeds 1.5 units, a person is legally drunk. Would a person be drunk after 3 hours?

- A) Yes
- B) No

Answer: A

256) The position of an object moving in a straight line is given by $s(t) = 10t^2 - 5t$, where s is in meters and t is the time in seconds the object has been in motion. How far will an object move in 10 seconds?

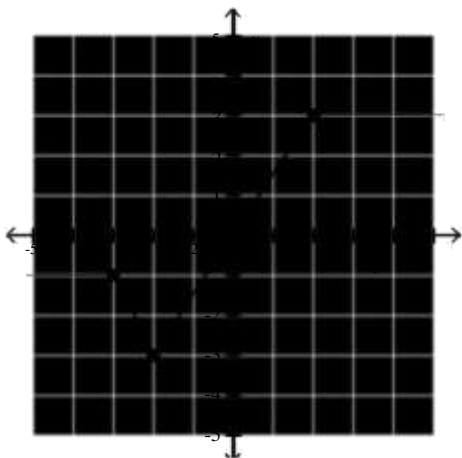
- A) 50 m
- B) 950 m
- C) 400 m
- D) 500 m

Answer: B

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

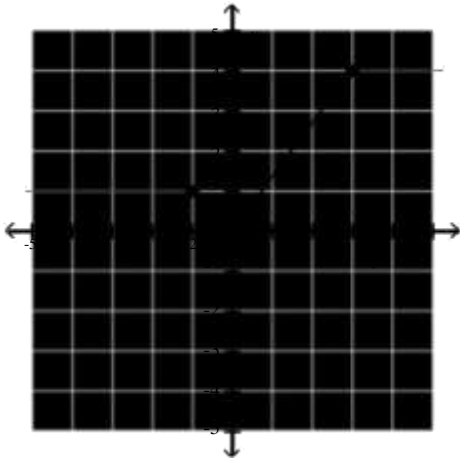
Use the graph of the function to find the following: a. the domain and range of the function; b. the intercepts, if any; c. the intervals on which the function is increasing, decreasing, or is constant; d. whether the function is even, odd, or neither.

257) 257)



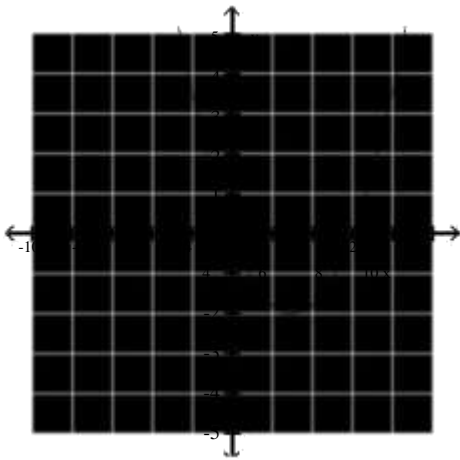
Answer: a. Domain: $(-8, 8)$; Range: $[-3; 3]$ b
 x-intercept: 0; y-intercept: 0 c.
 constant on $(-8, -3)$, decreasing on $(-3, -2)$, increasing on $(-2, 2)$, constant on $(2, 8)$
 d. Neither even nor odd.

258) 258)



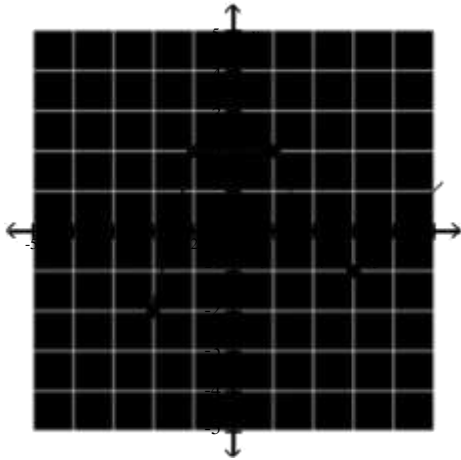
Answer: a. Domain: $(-8, 8)$; Range: $[0, 4]$ b
x-intercept: 0; y-intercept: 0
c. constant on $(-8, -1)$, decreasing on $(-1, 0)$, increasing on $(0, 3)$, constant on $(3, 8)$ d.
Neither even nor odd.

259) 259)



Answer: a. Domain: $(-8, 8)$; Range: $[-2, 8)$ b.
x-intercepts: 0, 6; y-intercept: 0
c. decreasing on $(-8, 3)$, increasing on $(3, 8)$ d.
Neither even nor odd.

260) 260)

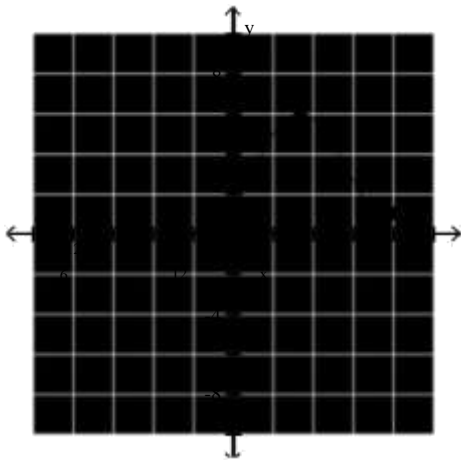


Answer: a. Domain: $[-2, 8)$; Range: $[-2, 8)$

b. x-intercepts: $-\frac{3}{2}, 2, 4$; y-intercept: 2

c. increasing on $(-2, -1)$, constant on $(-1, 1)$, decreasing on $(1, 3)$, increasing on $(3, 8)$ d. Neither even nor odd.

261) 261)



Answer: a. Domain: $[0, 12]$; Range: $[1:6]$

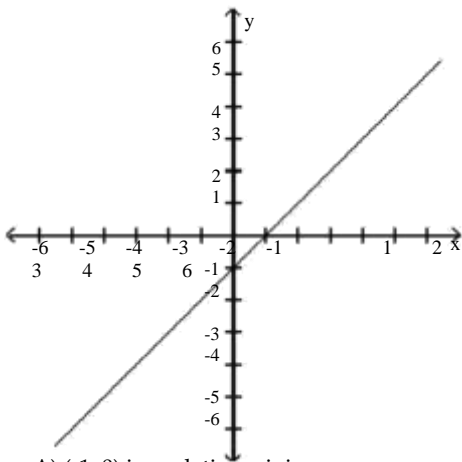
b. x-intercept: none; y-intercept: 1

c. increasing on $(0, 5)$, decreasing on $(5, 12)$ d. Neither even nor odd.

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

Locate relative maximum and relative minimum points on the graph. State whether each relative extremum point is a turning point.

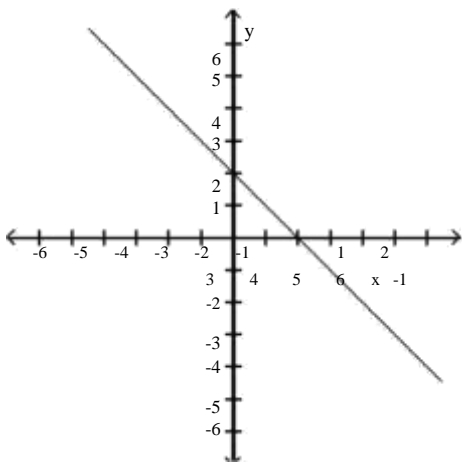
262) 262)



- A) $(-1, 0)$ is a relative minimum.
- B) No relative extrema.
- C) $(0, -1)$ is a relative minimum.
- D) $(0, -1)$ is a relative maximum.

Answer: B

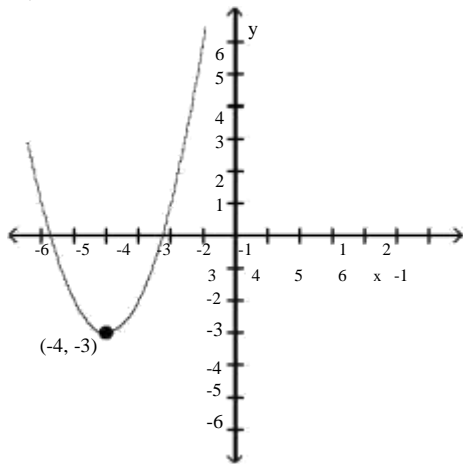
263) 263)



- A) No relative extrema.
- B) $(0, 2)$ is a relative minimum.
- C) $(2, 0)$ is a relative maximum.
- D) $(2, 0)$ is a relative minimum.

Answer: A

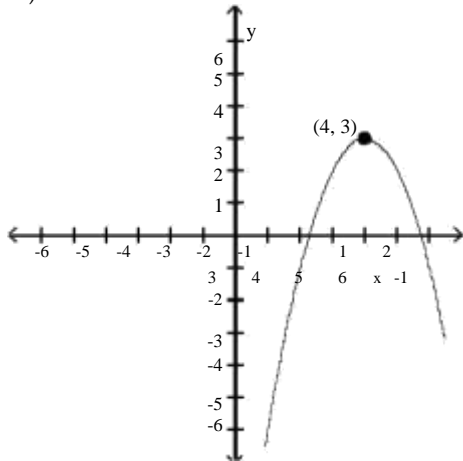
264) 264)



- A) $(-4, -3)$ is a relative minimum and a turning point. $(0, 0)$ is a relative maximum.
- B) $(-4, -3)$ is a relative maximum.
- C) $(-4, -3)$ is a relative minimum and a turning point.
- D) No relative extrema.

Answer: C

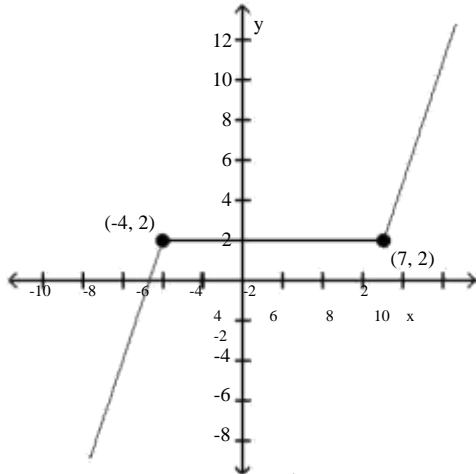
265) 265)



- A) $(4, 3)$ is a relative maximum and a turning point.
- B) No relative extrema.
- C) $(4, 3)$ is a relative minimum and a turning point.
- D) $(4, 0)$ is a relative maximum.

Answer: A

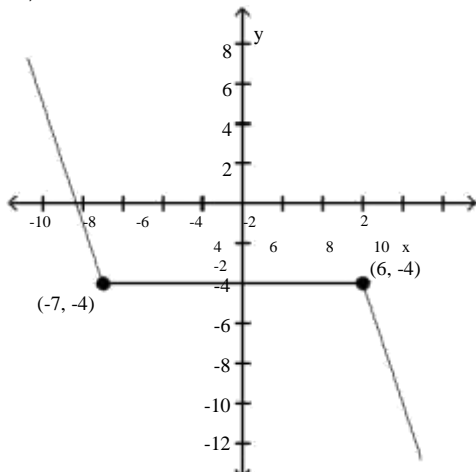
266) 266)



- A) Any point $(x, 2)$ is a relative maximum and a relative minimum point on the interval $(-4, 7)$; none of these points are turning points.
- B) $(-4, 2)$ and $(7, 2)$ are relative maxima and minima points; neither of these points are turning points
- C) Any point $(x, 2)$ is a relative maximum and a relative minimum point on the interval $(-4, 7)$; both $(-4, 2)$ and $(7, 2)$ are turning points.
- D) $(-4, 2)$ and $(7, 2)$ are relative maxima and minima points; both of these points are turning points

Answer: A

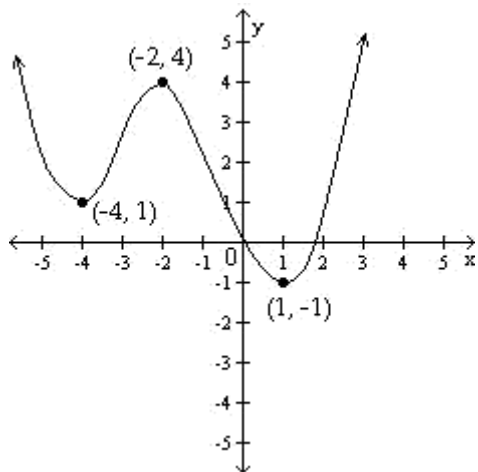
267) 267)



- A) $(-7, -4)$ and $(6, -4)$ are relative maxima and minima points; both of these points are turning points
- B) $(-7, -4)$ and $(6, -4)$ are relative maxima and minima points; neither of these points are turning points
- C) Any point $(x, -4)$ is a relative maximum and a relative minimum point on the interval $(-7, 6)$; both $(-7, -4)$ and $(6, -4)$ are turning points.
- D) Any point $(x, -4)$ is a relative maximum and a relative minimum point on the interval $(-7, 6)$; none of these points are turning points.

Answer: D

268) 268)

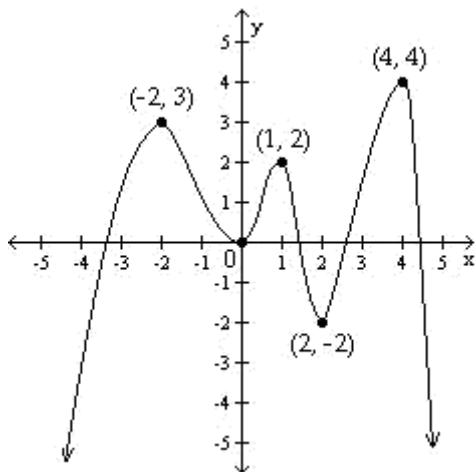


- A) $(-2, 4)$ is a relative maximum and a turning point. $(-4, 1)$ is a relative minimum point and a turning point. B) $(-2, 4)$ is a relative maximum point and a turning point. $(-4, 1)$ and $(1, -1)$ are relative minima points and turning points.
- C) $(-2, 4)$ is a relative maximum point and a turning point. $(1, -1)$ is a relative minimum point and a turning point.
- D) $(-2, 4)$ is a relative maximum. $(-4, 1)$ and $(1, -1)$ are relative minima points.

Answer:

B

269) 269)



- A) $(-2, 3)$, $(1, 2)$, and $(4, 4)$ are relative maxima points. $(0, 0)$ and $(2, -2)$ are relative minima points.
- B) $(-2, 3)$, $(1, 2)$, and $(4, 4)$ are relative maxima points and turning points. $(0, 0)$ and $(2, -2)$ are relative minima points and turning points.
- C) $(4, 4)$ is a relative maximum point and a turning point. $(2, -2)$ is a relative minimum point and a turning point.
- D) $(-2, 3)$, $(1, 2)$, and $(4, 4)$ are relative maxima points and turning points. $(2, -2)$ is a relative minimum point and a turning point.

Answer: B

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