Gustafson/Hughes College Algebra 12e Chapter 2 Form A

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. Indicate whether the equation determines y to be a function of x.

$|x-2|=y$

a. yes
b. no

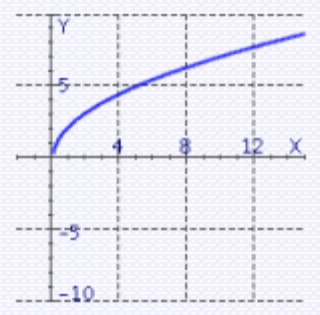
____ 2. Let the function f be defined by the equation $y = f(x)$, where x and $f(x)$ are real numbers. Find the range of the function $f(x)=\dfrac{13x+11}{x-8}$.

a. range: $(-\infty,-13)\cup(13,+\infty)$
b. range: $(-\infty,8)\cup(8,+\infty)$
c. range: $(-\infty,13)\cup(13,+\infty)$
d. range: $(-\infty,+\infty)$
e. range: $(-\infty,-13]\cup[13,+\infty)$

____ 3. Find the graph of the equation.

$f(x)=\sqrt{5x-1}$

a.



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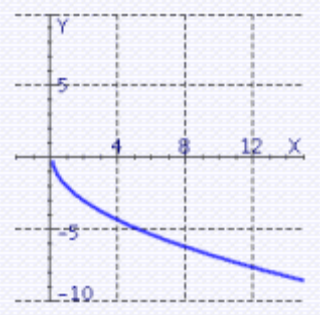

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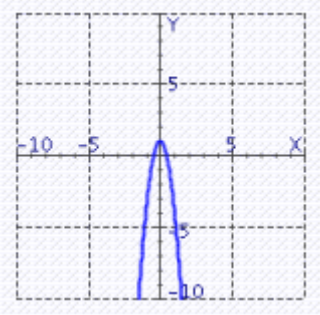

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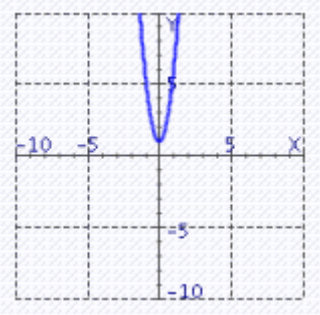
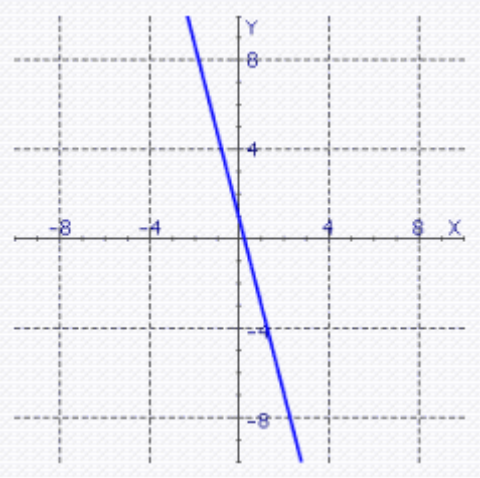


____ 4. Find the graph of the equation.

$2x + y = 2$

a.



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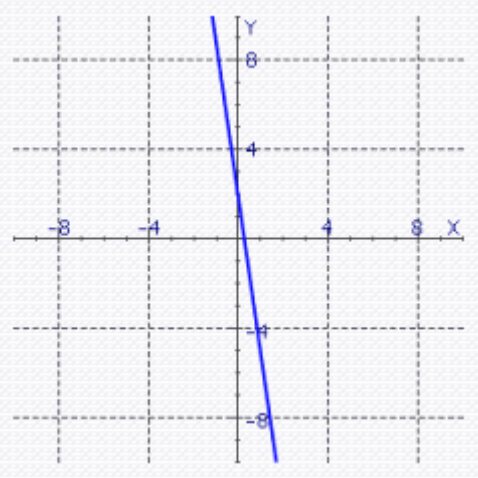

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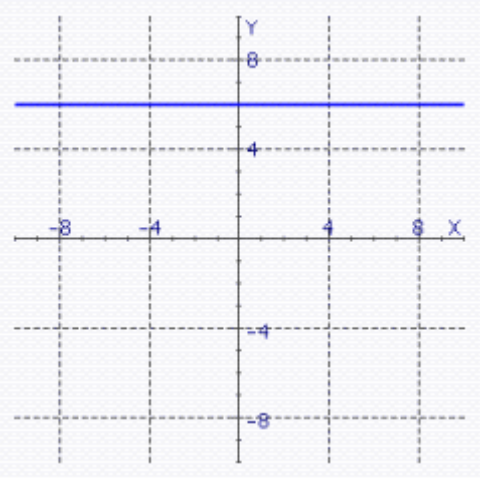
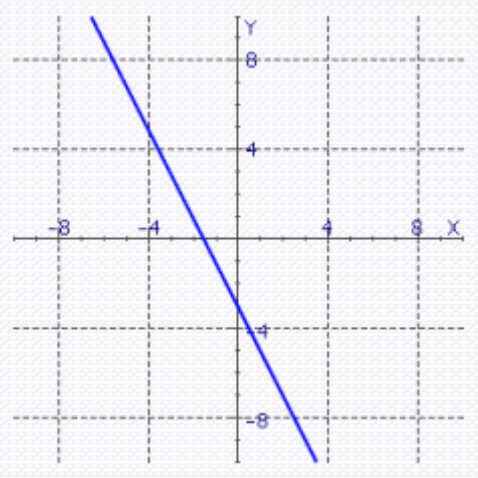


e.



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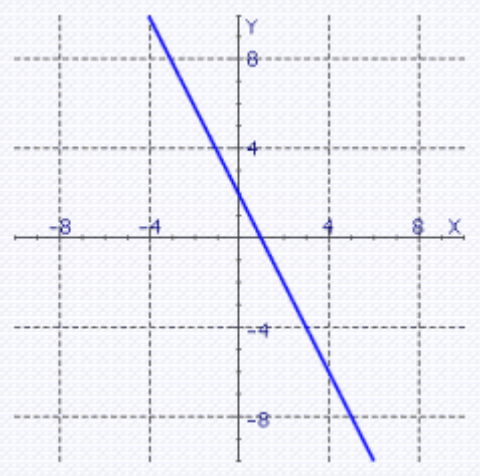


____ 5. Find the distance between the point P (2, 5) and O (0, 0).

a. $d(PQ) = \sqrt{40}$
b. $d(PQ) = \sqrt{34}$
c. $d(PQ) = \sqrt{32}$
d. $d(PQ) = \sqrt{29}$
e. $d(PQ) = \sqrt{28}$

____ 6. Find the slope of the line through $P(2,3)$ and $Q(–6,19)$.

a. $m = –2$
b. $m = –1$
c. $m = 1$
d. $m = 4$
e. $m = –7$

____ 7. Find the slope of the line passing through the pair of points:

P (-15,-19); Q (-14,-12)

a. $m=-7$
b. $m=7$
c. $m=-\frac{1}{7}$
d. $m=\frac{1}{7}$
e. none of these

____ 8. Determine whether the line through the points P (8,34), Q (12,16) and the line through R (4,17), S(6,8) are parallel, perpendicular, or neither.

a. neither
b. parallel
c. perpendicular

____ 9. Find the slopes of the lines PQ and PR, and determine whether the points P, Q, and R lie on the same line.

P (4,24) ; Q (2,12) ; R (6,36)

a. not on the same line
b. on the same line

____ 10. Find the value of *a* so that the slope of the line joining points $P(a,6)$ and $Q(4,4)$ is equal to 5.

a. –2
b. $-\frac{22}{5}$
c. $\frac{18}{5}$
d. 14
e. $\frac{22}{5}$

____ 11. Use point-slope form to write the equation of the line with the properties:

$m = 5$, passing through $P(2, 3)$

a. $-y = 5x - 7$
b. $y - 5x = 7$
c. $y = 5x + 3$
d. $5x + y = -7$
e. $y = 5x + 2$
f. $y = 5x - 7$

____ 12. Write the equation of the line that passes through the point P (0,0) and is parallel to the line $y = 10x - 9$.

a. $y = –9x$
b. $y = 10x$
c. $x = 10y$
d. $y = 9x + 10$
e. $y = 9x$

____ 13. Write the equation of the line that passes through the point P (3, 3) and is perpendicular to the line $y = - 4x + 6$.

a. $y = x + 2.25$
b. $x = 2.25y + \frac{1}{4}$
c. $y = \frac{1}{4}x + 3.75$
d. $y = \frac{1}{4}x + 6$
e. $y = \frac{1}{4}x + 2.25$

____ 14. In the following exercise, assume straight-line depreciation.

A word processor costs $570.00 when new and is expected to be worth $195.00 after 5 years. What will it be worth after 2 years?

a. $570.00
b. $382.50
c. $420.00
d. $195.00
e. $375.00

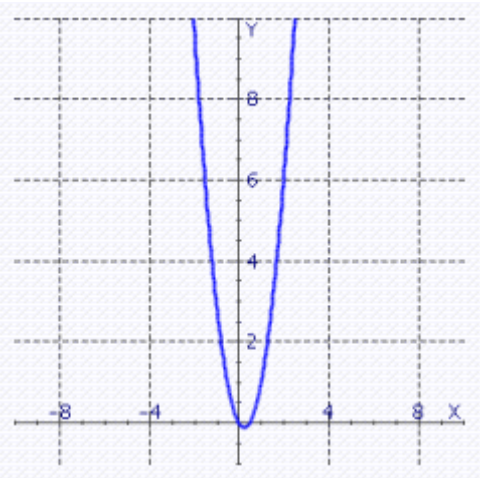
____ 15. A printer charges a fixed setup cost, plus $0.20 for every 20 copies. If 330 copies cost $48.30, how much will it cost to print 1400 copies?

a. $185.00
b. $152.00
c. $59.00
d. $55.70
e. none of these

____ 16. Graph the equation.

$$y = \frac{1}{2}x^2 - x$$

a.



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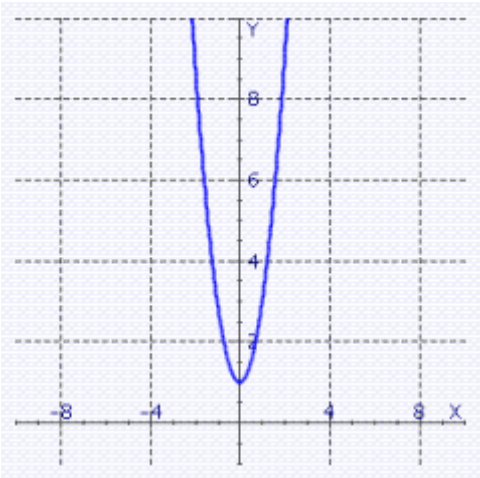

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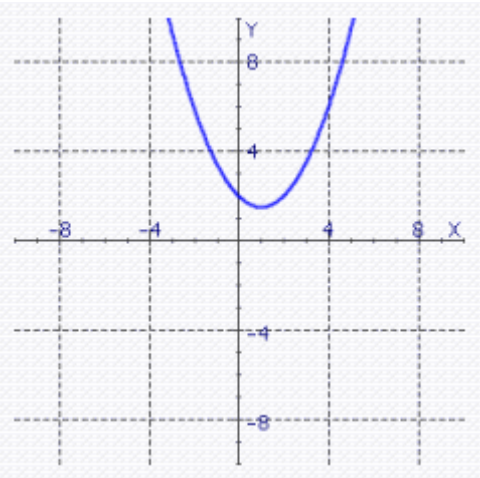
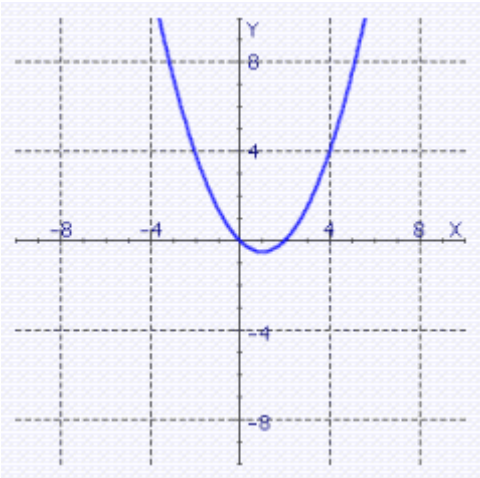


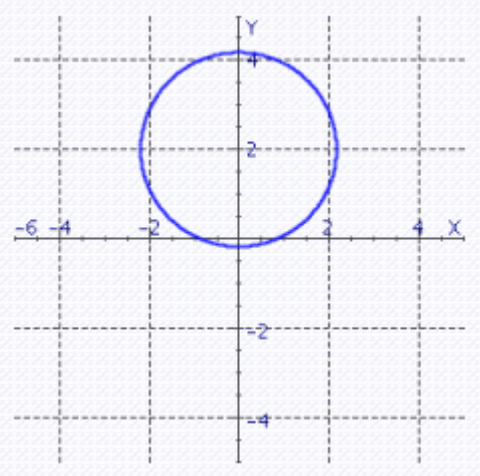
d.



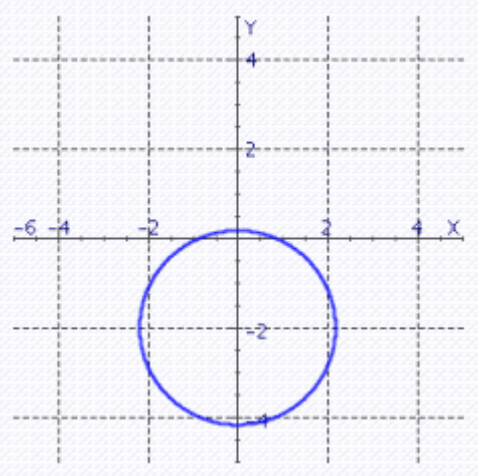
____ 17. Graph the equation.

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

a.



c.



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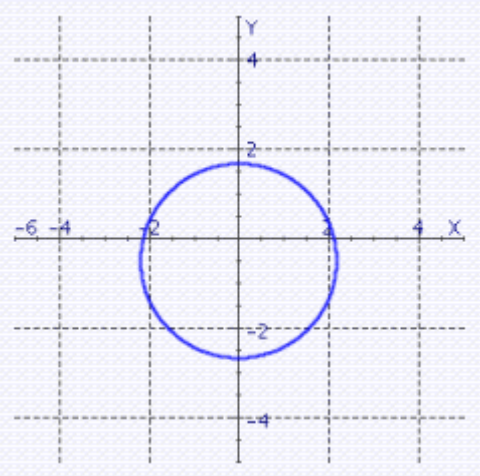
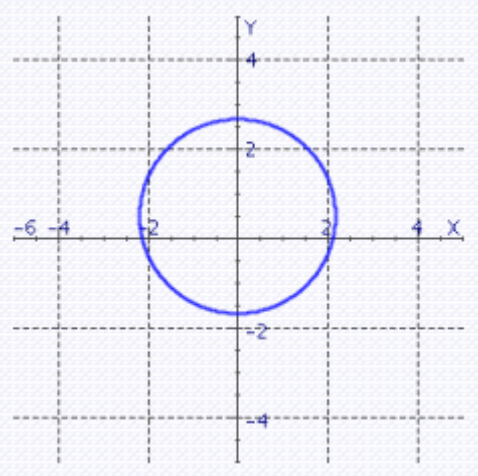
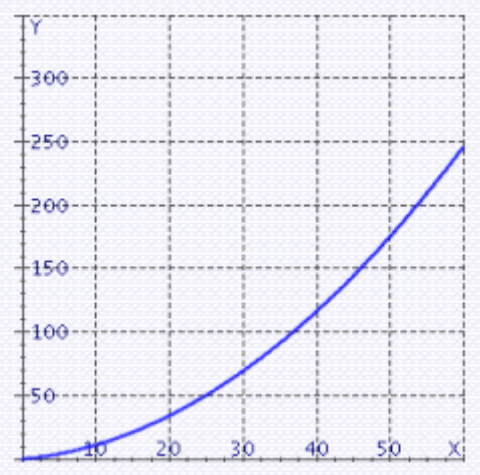


d.

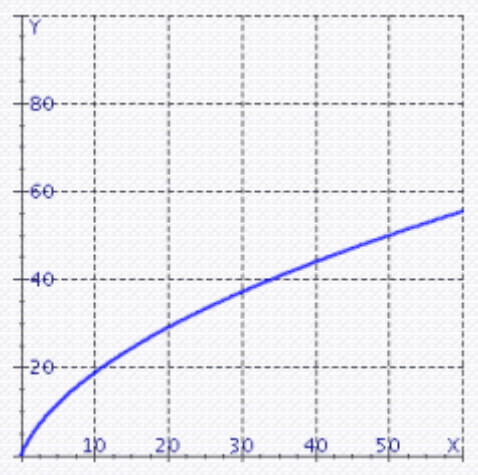


____ 18. The stopping distance D (in feet) for a car moving V miles per hour is given by $D = 0.06V^2 + 0.5V$. Graph the equation for velocities between 0 and 60 mph.

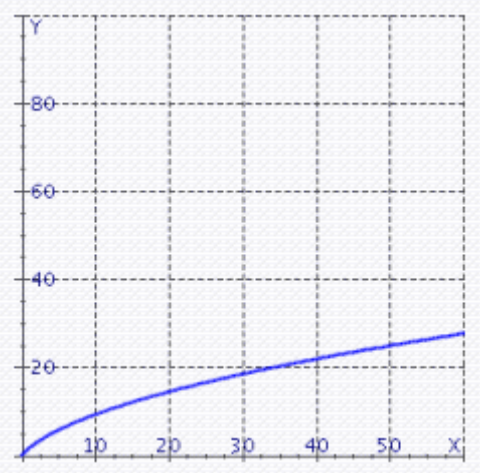
a.



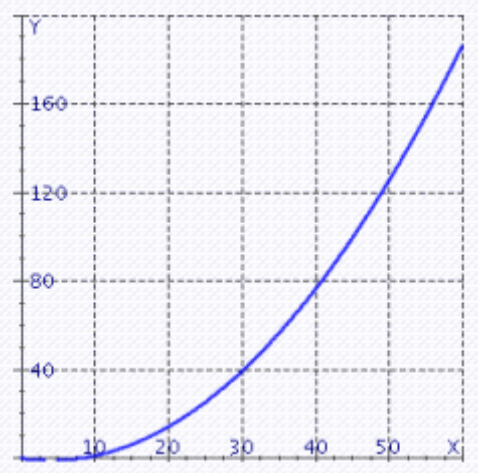
c.



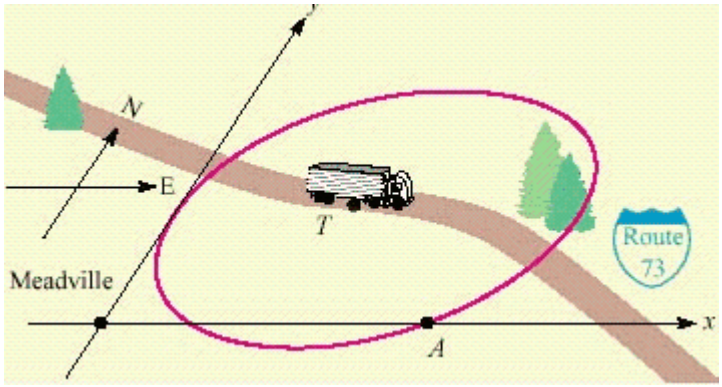
b.



d.



____ 19. The CB radio of a trucker covers the circular area shown in illustration. Find the equation of that circle, in general form.



$T(6, 4)$; $A(9, 0)$

a. $x^2 + y^2 - 6x - 4y - 27 = 0$
b. $(x - 4)^2 + (y - 6)^2 = 25$
c. $x^2 + y^2 - 12x - 8y + 27 = 0$
d. $(x - 6)^2 + (y - 4)^2 = 25$
e. $x^2 + y^2 - 12x - 8y + 25 = 0$

____ 20. Solve the proportion.

$$\frac{12}{x} = \frac{2}{9}$$

a. $x = 12$
b. $x = 54$
c. $x = -54$
d. $x = -12$
e. no solution

____ 21. Find the constant of proportionality for the stated conditions: y is directly proportional to x, and $x = 5$ when $y = 35$.

a. $k = 5$
b. $k = 7$
c. $k = 35$
d. $k = -5$
e. $k = -7$

____ 22. Given that y is directly proportional to x and $y = 40$ when $x = 8$, find y when $x = \frac{48}{5}$.

a. $y = -48$
b. $y = 64$
c. $y = 48$
d. $y = 8$
e. $y = 6$

____ 23. Given that w is directly proportional to z and $w = 8$ when $z = 7$, find w when $z = 21$.

a. $w = 24$
b. $w = -24$
c. $w = 3$
d. $w = 18$
e. $w = 21$

____ 24. Given that m varies jointly with the square of n and the square root of q and $m = 12$ when $n = 5$ and $q = 6$, find m when $n = 35$ and $q = 54$.

a. $m = 5$
b. $m = 12$
c. $m = 6$
d. $m = 30$
e. $m = 1764$

____ 25. The power, in watts, dissipated as heat in a resistor varies jointly with the resistance, in ohms, and the square of the current, in amperes. A 15-ohm resistor carrying a current of 1 ampere dissipates 15 watts. How much power is dissipated in a 80-ohm resistor carrying a current of 3 amperes?

a. $P = 80$ Watts
b. $P = 8$ Watts
c. $P = 3$ Watts
d. $P = 720$ Watts
e. $P = 24$ Watts

Gustafson/Hughes College Algebra 12e Chapter 2 Form A

Answer Section

1. A
2. C
3. A
4. C
5. D
6. A
7. B
8. B
9. B
10. E
11. F
12. B
13. E
14. C
15. C
16. D
17. B
18. A
19. C
20. B
21. B
22. C
23. A
24. E
25. D

Gustafson/Hughes College Algebra 12e Chapter 2 Form B

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. Indicate whether the equation determines y to be a function of x.

$|x-2|=y$

a. no
b. yes

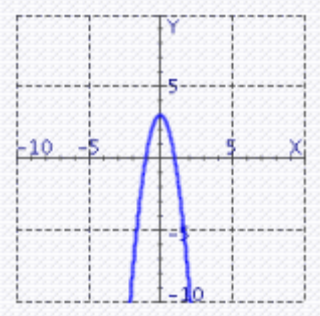
____ 2. Let the function f be defined by the equation $y = f(x)$, where x and $f(x)$ are real numbers. Find the range of the function $f(x)=\dfrac{7x+3}{x-47}$.

a. range: $(-\infty, 7)\cup(7, +\infty)$
b. range: $(-\infty, 47)\cup(47, +\infty)$
c. range: $(-\infty, -7)\cup(7, +\infty)$
d. range: $(-\infty, +\infty)$
e. range: $(-\infty, -7]\cup[7, +\infty)$

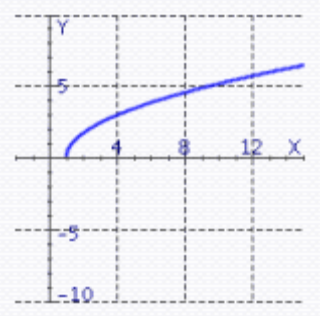
____ 3. Find the graph of the equation.

$f(x)=\sqrt{3x-3}$

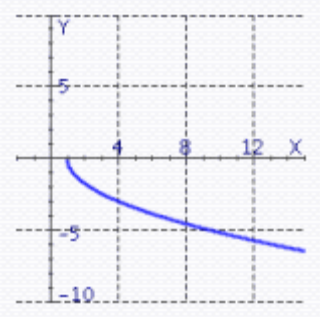
a.



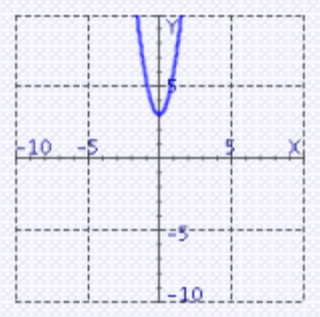
c.



b.



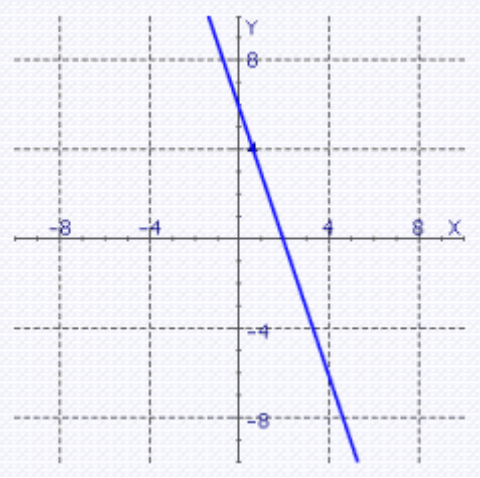
d.



____ 4. Find the graph of the equation.

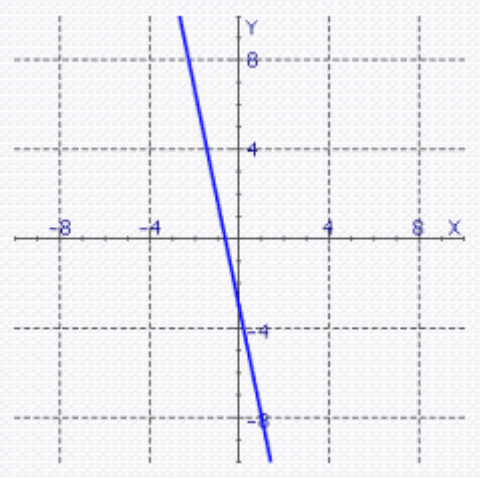
$5x + y = 2$

a.



d.

b.



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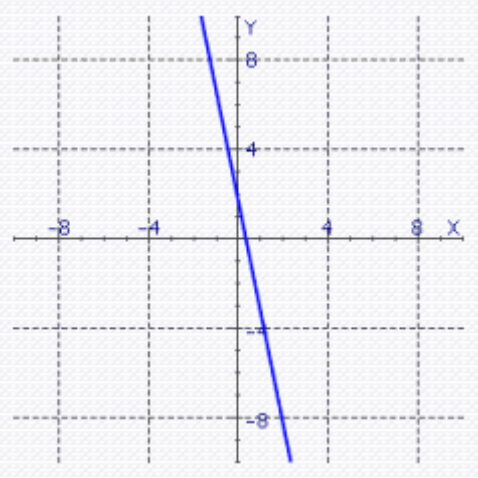

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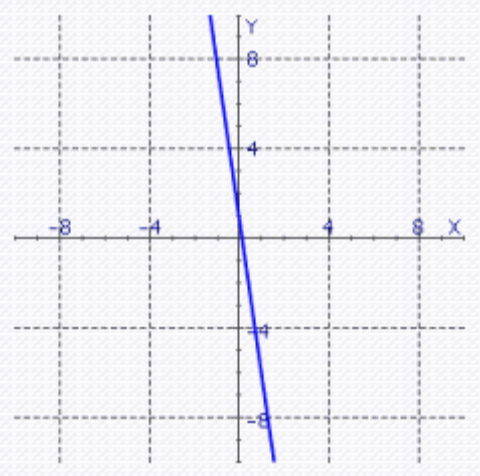


____ 5. Find the distance between the point *P* (3, 5) and *O* (0, 0).

a. $d(PQ) = \sqrt{37}$
b. $d(PQ) = \sqrt{39}$
c. $d(PQ) = \sqrt{45}$
d. $d(PQ) = \sqrt{33}$
e. $d(PQ) = \sqrt{34}$

____ 6. Find the slope of the line through *P*(0,–2) and *Q*(–5,–2).

a. $m = -5$
b. $m = 0$
c. $m = 6$
d. $m = 1$
e. $m = 3$

____ 7. Find the slope of the line passing through the pair of points:

P (-15,-19); *Q* (-14,-12)

a. $\mathrm{m}=7$
b. $\mathrm{m}=-7$
c. $\mathrm{m}=-\frac{1}{7}$
d. $\mathrm{m}=\frac{1}{7}$
e. none of these

____ 8. Determine whether the line through the points *P* (40,4), *Q* (28,8) and the line through *R* (20,2), *S*(14,4) are parallel, perpendicular, or neither.

a. parallel
b. perpendicular
c. neither

____ 9. Find the slopes of the lines *PQ* and *PR*, and determine whether the points *P*, *Q*, and *R* lie on the same line.

P (4,21) ; *Q* (–5,–42) ; *R* (14,91)

a. on the same line
b. not on the same line

____ 10. Find the value of *a* so that the slope of the line joining points $P(a,3)$ and $Q(2,4)$ is equal to 4.

a. $\frac{9}{4}$
b. –2
c. $\frac{7}{4}$
d. $-\frac{1}{4}$
e. $-\frac{7}{4}$

____ 11. Use point-slope form to write the equation of the line with the properties:

$m = 5$, passing through $P(5, 5)$

a. $5x + y = -20$
b. $y = 5x + 4$
c. $y = 5x - 20$
d. $-y = 5x - 20$
e. $y - 5x = 20$
f. $y = 5x + 5$

____ 12. Write the equation of the line that passes through the point P (0,0) and is parallel to the line $y = 8x - 3$.

a. $y = 3x$
b. $y = 3x + 8$
c. $y = 8x$
d. $y = -3x$
e. $x = 8y$

____ 13. Write the equation of the line that passes through the point P (3, 2) and is perpendicular to the line $y = -4x + 20$.

a. $y = \frac{1}{4}x + 2.75$
b. $y = x + 1.25$
c. $x = 1.25y + \frac{1}{4}$
d. $y = \frac{1}{4}x + 1.25$
e. $y = \frac{1}{4}x + 20$

____ 14. In the following exercise, assume straight-line depreciation.

A word processor costs $570.00 when new and is expected to be worth $145.00 after 5 years. What will it be worth after 2 years?

a. $570.00
b. $400.00
c. $145.00
d. $357.50
e. $425.00

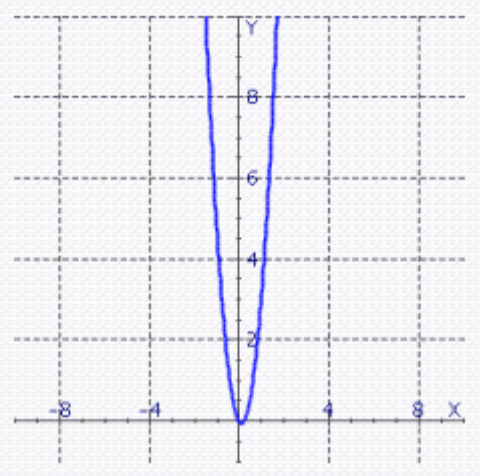
____ 15. A printer charges a fixed setup cost, plus $0.90 for every 90 copies. If 340 copies cost $33.40, how much will it cost to print 900 copies?

a. $120.00
b. $86.00
c. $39.00
d. $35.60
e. none of these

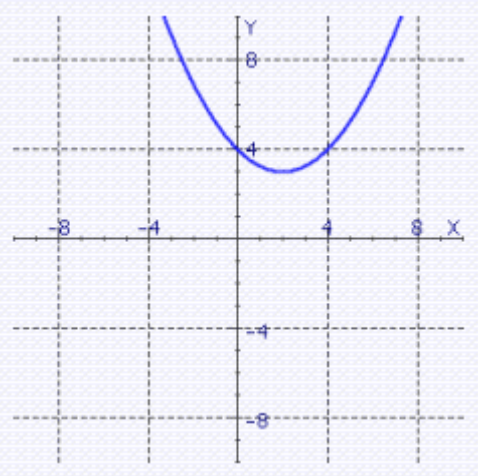
____ 16. Graph the equation.

$$y = \frac{1}{4}x^2 - x$$

a.



c.



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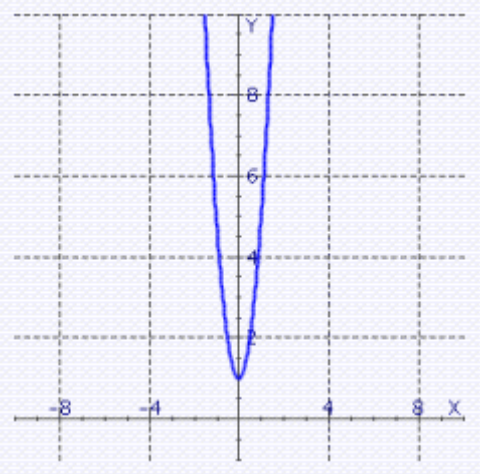
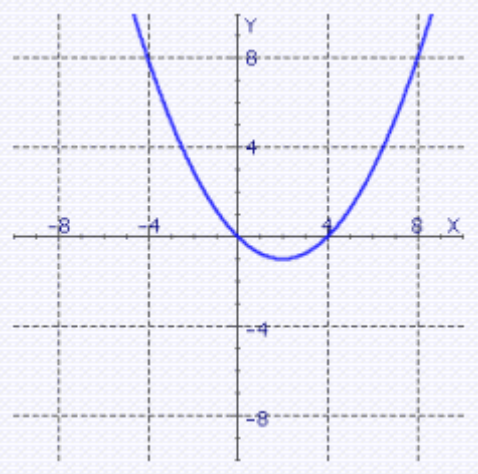


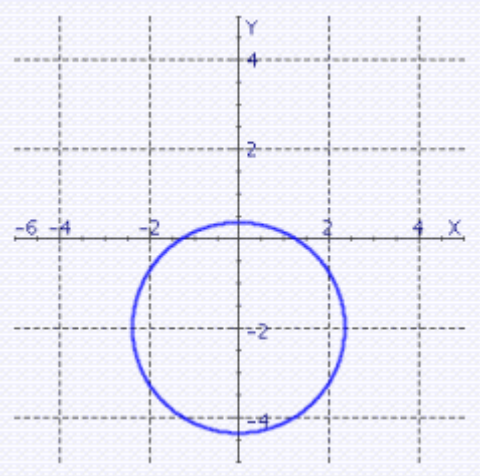
d.



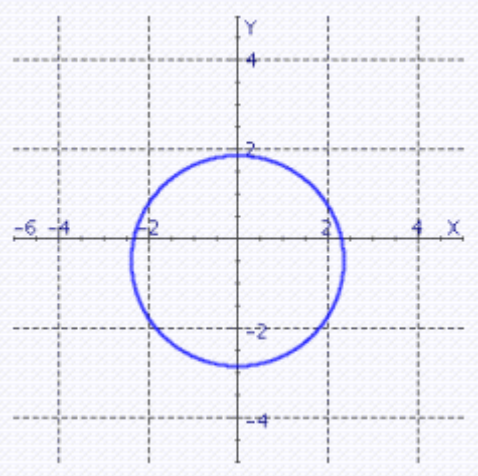
____ 17. Graph the equation.

$3x^2 + 3y^2 + 3y = 16$

a.



c.



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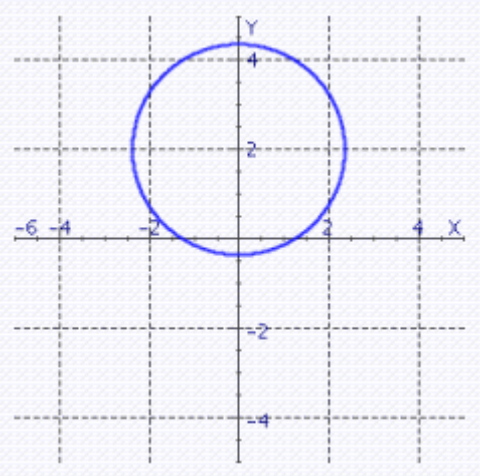
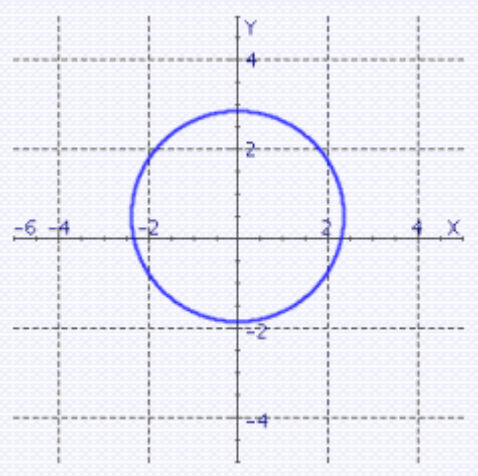
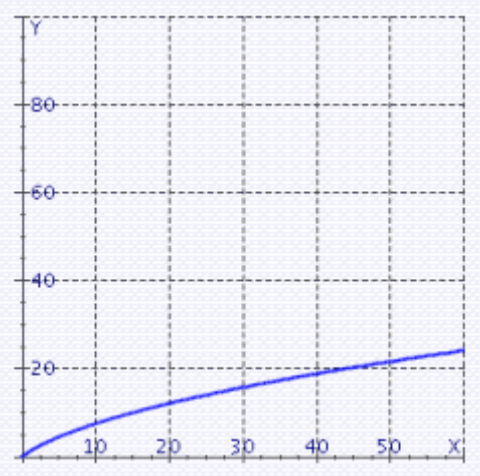


d.

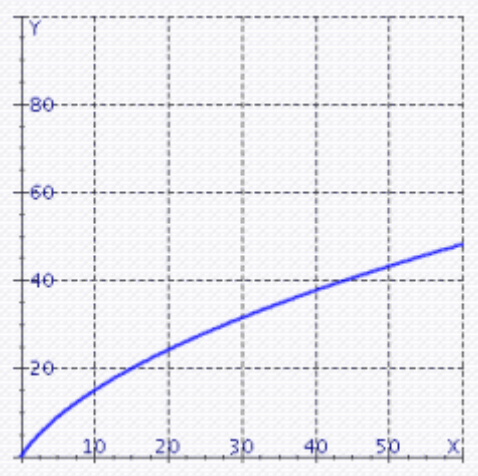


____ 18. The stopping distance D (in feet) for a car moving V miles per hour is given by $D = 0.07V^2 + 0.8V$. Graph the equation for velocities between 0 and 60 mph.

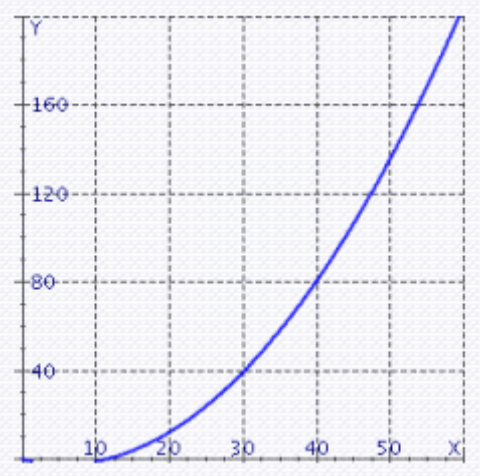
a.



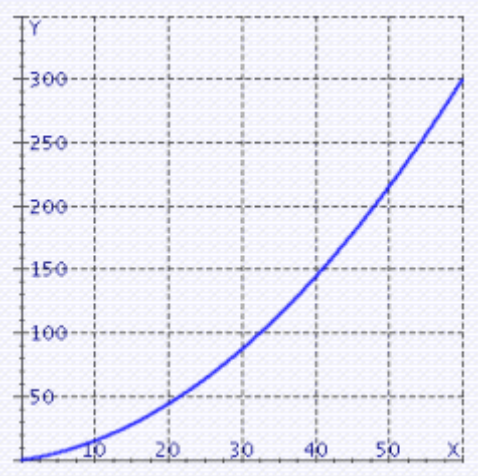
c.



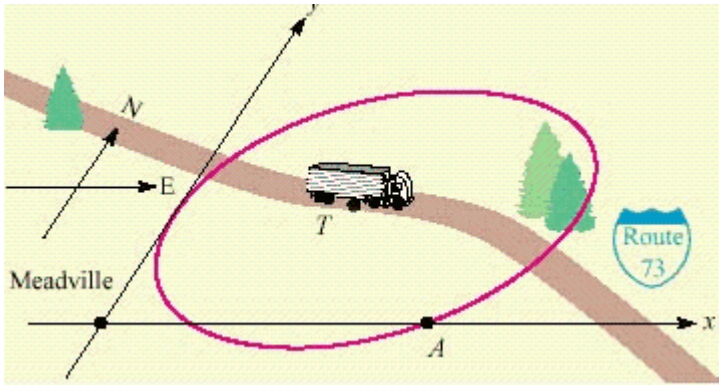
b.



d.



____ 19. The CB radio of a trucker covers the circular area shown in illustration. Find the equation of that circle, in general form.



$T(6, 4)$; $A(10, 0)$

a. $(x - 6)^2 + (y - 4)^2 = 32$
b. $x^2 + y^2 - 6x - 4y - 20 = 0$
c. $x^2 + y^2 - 12x - 8y + 20 = 0$
d. $(x - 4)^2 + (y - 6)^2 = 32$
e. $x^2 + y^2 - 12x - 8y + 32 = 0$

____ 20. Solve the proportion.

$$\frac{12}{x} = \frac{2}{13}$$

a. $x = 12$
b. $x = 78$
c. $x = -12$
d. $x = -78$
e. no solution

____ 21. Find the constant of proportionality for the stated conditions: y is directly proportional to x, and $x = 5$ when $y = 35$.

a. $k = 7$
b. $k = -5$
c. $k = 35$
d. $k = -7$
e. $k = 5$

____ 22. Given that y is directly proportional to x and $y = 27$ when $x = 8$, find y when $x = \frac{32}{3}$.

a. $y = -36$
b. $y = 36$
c. $y = 81$
d. $y = 4$
e. $y = 9$

____ 23. Given that w is directly proportional to z and $w = 7$ when $z = 9$, find w when $z = 72$.

a. $w = 56$
b. $w = -56$
c. $w = 64$
d. $w = 72$
e. $w = 8$

____ 24. Given that m varies jointly with the square of n and the square root of q and $m = 13$ when $n = 8$ and $q = 7$, find m when $n = 48$ and $q = 175$.

a. $m = 13$
b. $m = 8$
c. $m = 7$
d. $m = 56$
e. $m = 2340$

____ 25. The power, in watts, dissipated as heat in a resistor varies jointly with the resistance, in ohms, and the square of the current, in amperes. A 35-ohm resistor carrying a current of 1 ampere dissipates 35 watts. How much power is dissipated in a 50-ohm resistor carrying a current of 8 amperes?

a. $P = 5$ Watts
b. $P = 50$ Watts
c. $P = 8$ Watts
d. $P = 40$ Watts
e. $P = 3{,}200$ Watts

Gustafson/Hughes College Algebra 12e Chapter 2 Form B

Answer Section

1. B
2. A
3. C
4. E
5. E
6. B
7. A
8. A
9. A
10. C
11. C
12. C
13. D
14. B
15. C
16. D
17. C
18. D
19. C
20. B
21. A
22. B
23. A
24. E
25. E

Gustafson/Hughes College Algebra 12e Chapter 2 Form C

Multiple Choice/Short Answer
Identify the choice that best completes the statement or answers the question/Use the space provided to write your answer.

____ 1. Indicate whether the equation determines y to be a function of x.

$|x-2|=y$

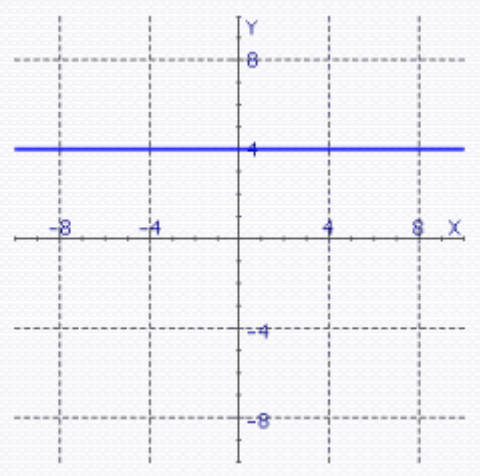
a. yes
b. no

2. Find the equation in general form of the circle with the center at the origin and $r = 3$.

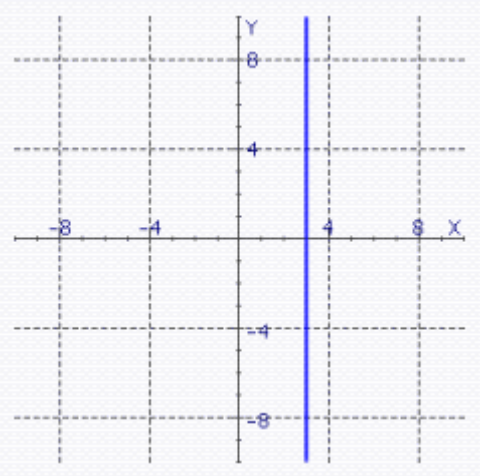
____ 3. Find the graph of the equation.

$x = 3$

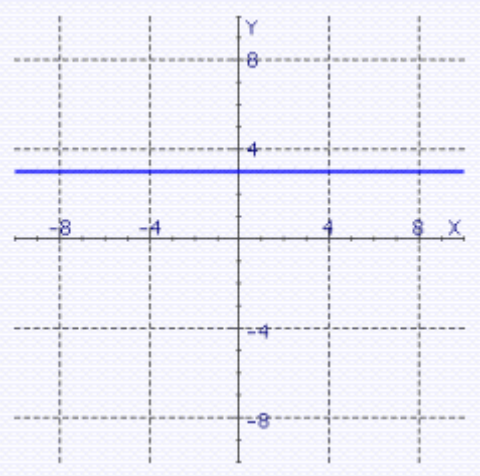
a.



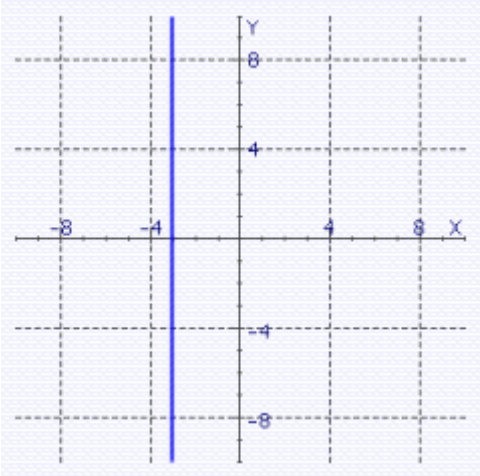
b.



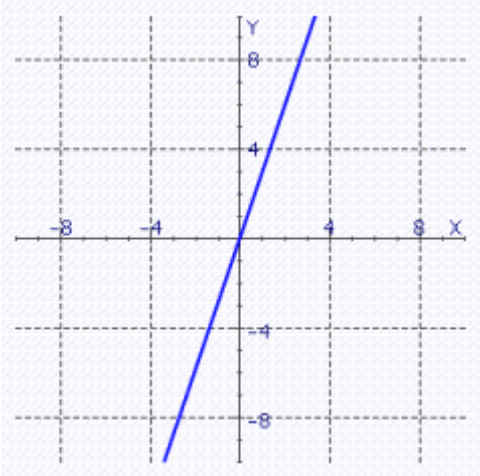
c.



d.



e.



4. Find the equation in general form of the circle with the given properties.

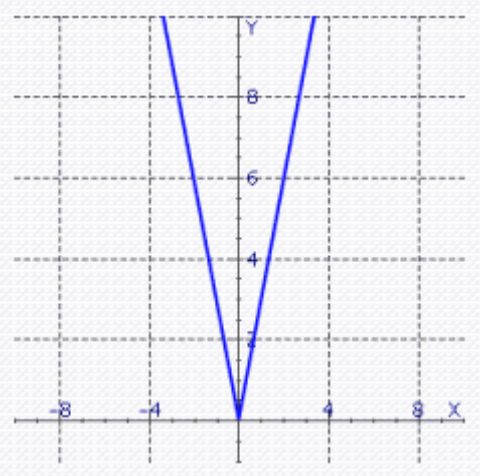
   Center at (3, 3) and passing through the origin.

5. Given that y is directly proportional to x and $y = 35$ when $x = 8$, find y when $x = \frac{48}{7}$.

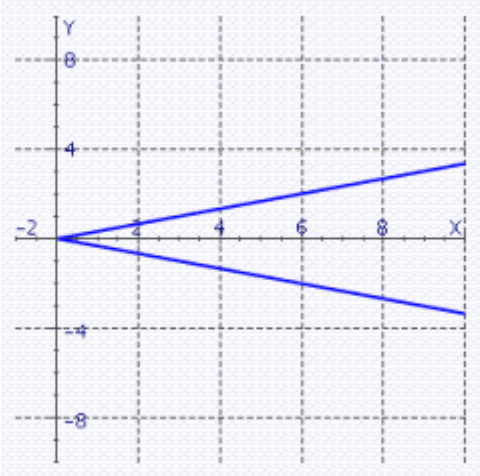
____ 6. Graph the equation.

$y = 3 | x |$

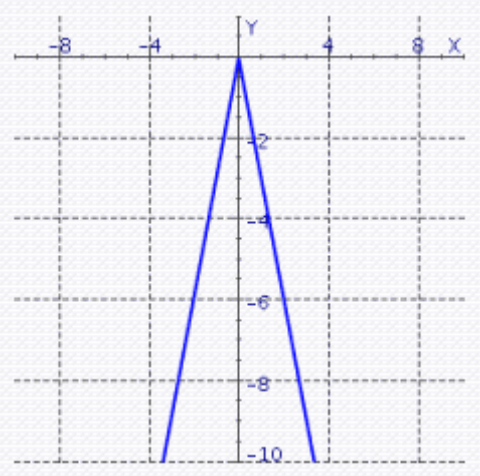
a.



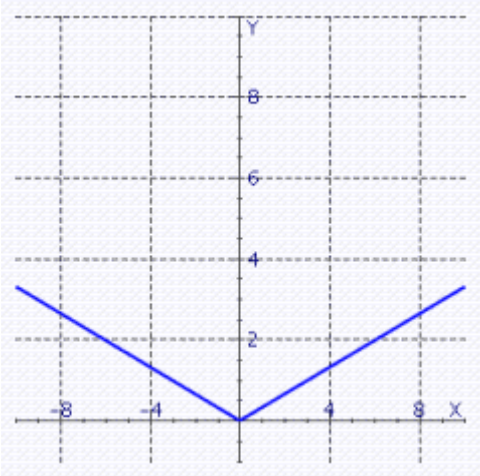
c.



b.



d.

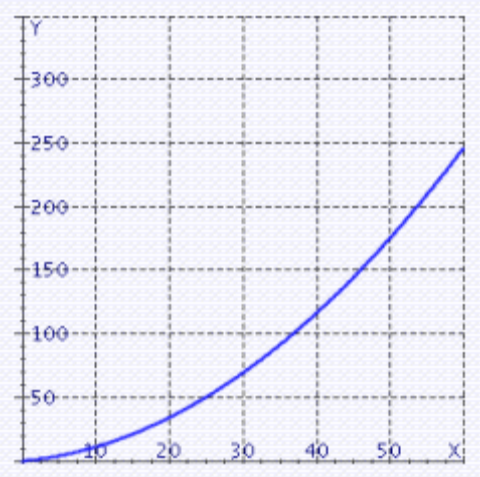


7. Find the slope of the line passing through the pair of points.

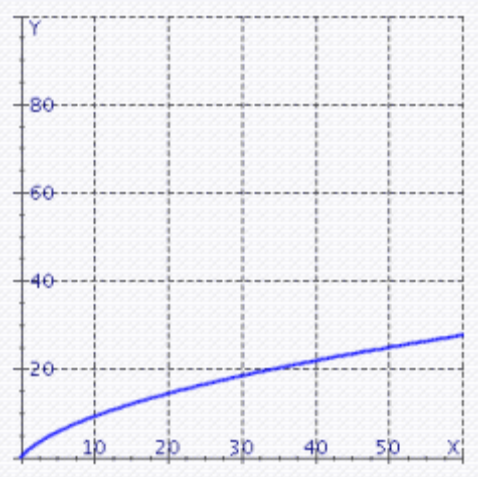
   $P(-2,-8)$; $Q(15,1)$

____ 8. The stopping distance D (in feet) for a car moving V miles per hour is given by $D = 0.06V^2 + 0.5V$. Graph the equation for velocities between 0 and 60 mph.

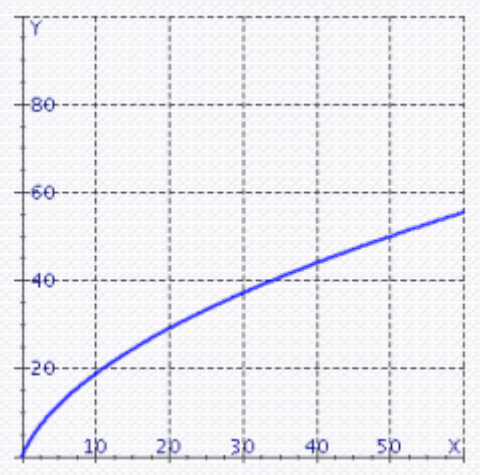
a.



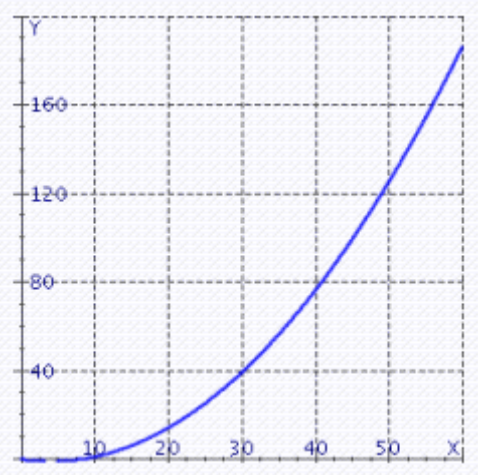
c.



b.



d.



9. A student deposits $10 each month in a Holiday Club account at her bank. The account pays no interest. Write an equation that expresses the amount in her account in terms of the number of deposits.

   Please enter your answer as an equation $y = ax + b$, where x is the number of months and y is the amount in her account.

10. Indicate the quadrant in which the point (2, 5) lies.

    Please enter your answer as a number: *1*, *2*, *3*, or *4*.

11. Indicate the quadrant in which the point (- 5, - 10) lies.

    Please enter your answer as a number: *1*, *2*, *3*, or *4*.

12. Solve the proportion.

    $$\frac{x}{18} = \frac{2}{x+5}$$

    Please enter your answer as two numbers, separated by a comma.

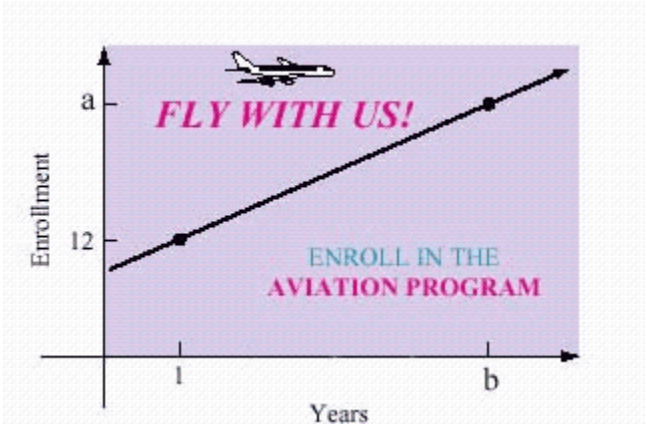
13. Find the distance between the point $P(\sqrt{8}, \sqrt{92})$ and $O(0,0)$.

____ 14. Find the slope of the line.

$y = 16x + 12$

a. $m = 20$
b. $m = 16$
c. $m = 17$
d. $m = 13$
e. $m = -16$

15. When a college started an aviation program, the administration agreed to predict enrollments using a straightline method. If the enrollment during the first year was 12, and the enrollment during year 8 was 40, find the rate of growth per year (the slope of the line). See the illustration.



$a = 40$, $b = 8$

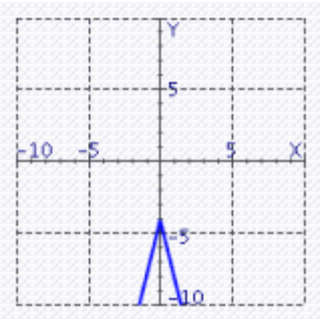
_____ students per year.

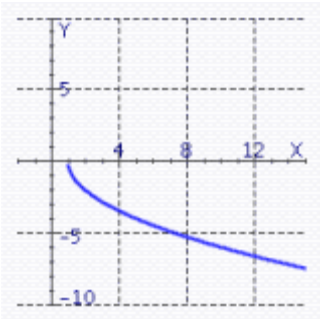
16. In the following exercise, assume straight-line appreciation.

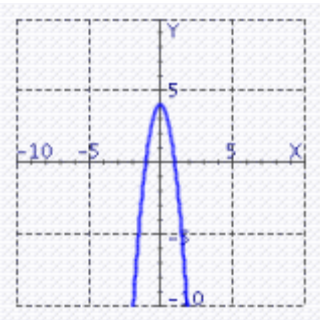
    An apartment building was purchased for $475,000, excluding the cost of land. The owners expect the property to double in value in 5 years. Find the appreciation equation. Do not use commas in your numbers.

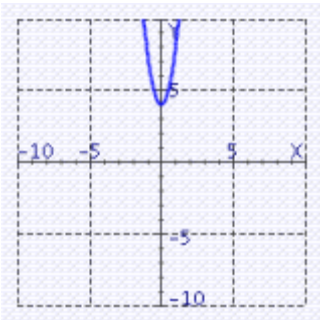
____ 17. Find the graph of the equation.

$f(x) = -4|x| - 4$

a. 

c. 

b. 

d. 

18. In the following exercise, assume straight-line depreciation.

    A word processor costs $545 when new and is expected to be worth $20 after 7 years. What will it be worth after 3 years?

    Please enter your answer rounded to the nearest whole dollar, without the units.

19. Find the *y*-intercept of the line determined by the equation.

    $-3x + 5y = 5$

    Please enter your answer as an ordered pair.

20. Solve the proportion.

    $$\frac{2}{x} = \frac{2}{13}$$

____ 21. Write the equation of the line that passes through the point P (1, 4) and is perpendicular to the line $y = -5x + 10$.

a. $y = \frac{1}{5}x + 10$

b. $y = x + 3.8$

c. $x = 3.8y + \frac{1}{5}$

d. $y = \frac{1}{5}x + 3.8$

e. $y = \frac{1}{5}x + 4.2$

22. The ratio of lime to sand in mortar is 7 to 8. How much lime must be mixed with 72 bags of sand to make mortar?

Please enter your answer as a number without the units.

23. One endpoint P (3, - 2) and the midpoint M (- 3, 3) of line segment PQ are given. Find the coordinates of the other endpoint, Q.

____ 24. Give the domain of the function.

$f(x) = -\sqrt[3]{12x + 31}$

a. $(-\infty, 12)$
b. $(-\infty, \frac{31}{12})$
c. $(-\infty, 12]$
d. $(-\infty, \infty)$
e. $(0, \frac{31}{12})$

25. Find the slope of the line.

$9(x-25) = 30y+25$

Gustafson/Hughes College Algebra 12e Chapter 2 Form C

Answer Section

1. A
2. $x^2 + y^2 - 9 = 0$
3. B
4. $x^2 + y^2 - 6x - 6y = 0$
5. 30
6. A
7. $\frac{9}{17}$
8. A
9. $y = 10x + 0$
10. 1
11. 3
12. $-9, 4$
13. 10
14. B
15. 4
16. $y = 95,000x + 475,000$
17. A
18. 320
19. $\left(0, 1\right)$
20. 13
21. D
22. 63
23. $\left(-9, 8\right)$
24. D
25. $\frac{3}{10}$

Gustafson/Hughes College Algebra 12e Chapter 2 Form D

Multiple Choice/Short Answer
Identify the choice that best completes the statement or answers the question/Use the space provided to write your answer.

1. Find the *y*-intercept of the line determined by the equation.

   $-3x + 10y = 10$

   Please enter your answer as an ordered pair.

____ 2. Let the function f be defined by the equation $y = f(x)$, where x and $f(x)$ are real numbers. Find the domain and range of the function $f(x) = \sqrt{49x^2 - 11}$.

   a. $\text{domain: } (-\infty, -\frac{11}{7}] \cup [\frac{11}{7}, +\infty)$
   b. $\text{domain: } (-\infty, -\frac{11}{49}) \cup (\frac{11}{49}, +\infty)$
   c. $\text{domain: } (-\infty, -\frac{\sqrt{11}}{7}] \cup [\frac{\sqrt{11}}{7}, +\infty)$
   d. $\text{domain: } (-\infty, -\frac{\sqrt{11}}{7}) \cup (\frac{\sqrt{11}}{7}\}, +\infty)$
   e. $\text{domain: } (-\infty, -\frac{11}{49}] \cup [\frac{11}{49}, +\infty)$

3. Find the distance between the point $P(6, 6)$ and $Q(7, 3)$.

   Enter as a radical expression or an integer.

____ 4. Indicate the quadrant in which the point (2, 6) lies.

   a. quadrant IV
   b. quadrant I
   c. quadrant III
   d. quadrant II
   e. none of these

5. A printer charges a fixed setup cost, plus $0.80 for every 80 copies. If 370 copies cost $53.70, how much will it cost to print 1300 copies?

   Please enter your answer rounded to the nearest whole dollar, without the units.

____ 6. The number of television sets that consumers buy depends on price. The higher the price, the fewer TVs people will buy. The equation that relates price to the number of TVs sold at that price is called a demand equation. If the demand equation for a 13-inch TV is $p = -\frac{1}{10}q + 170$, where p is the price and q is the number of TVs sold at that price, how many TVs will be sold at a price of $155?

   a. 180
   b. 93
   c. 277
   d. 150
   e. 185

7. One endpoint P (1, - 3) and the midpoint M (- 5, 4) of line segment PQ are given. Find the coordinates of the other endpoint, Q.

____ 8. In the following exercise, assume straight-line appreciation.

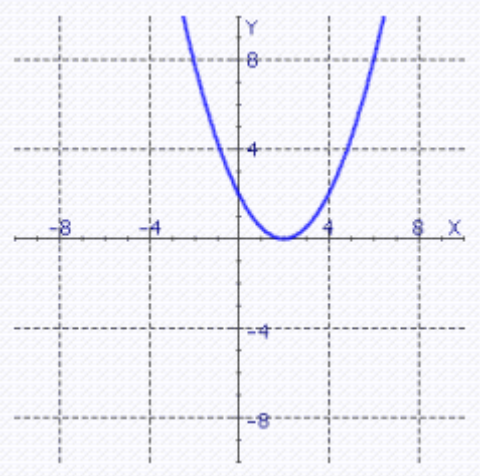
   An antique table is expected to appreciate $20.00 each year. If the table will be worth $220.00 in 5 years, what will it be worth in 11 years?

   a. $440.00
   b. $540.00
   c. $220.00
   d. $340.00
   e. $792.20

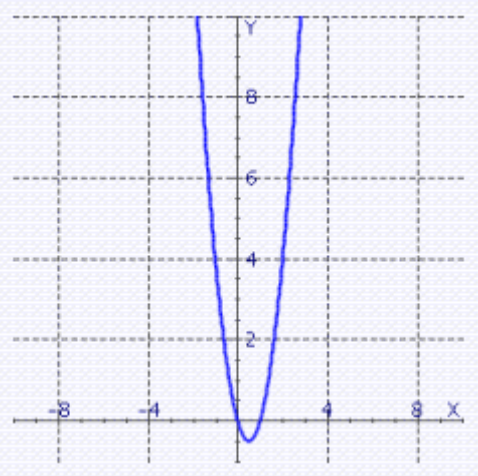
____ 9. Graph the equation.

$$y = \frac{1}{2}x^2 - 2x$$

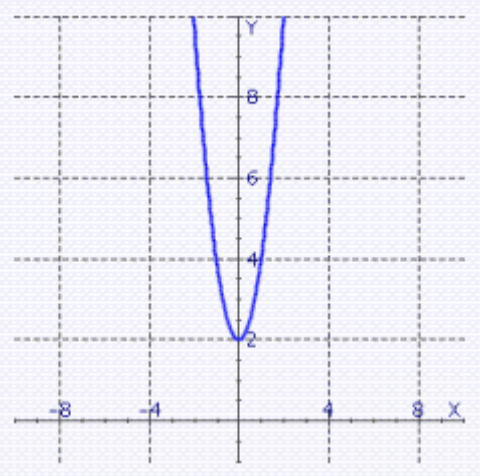
a.



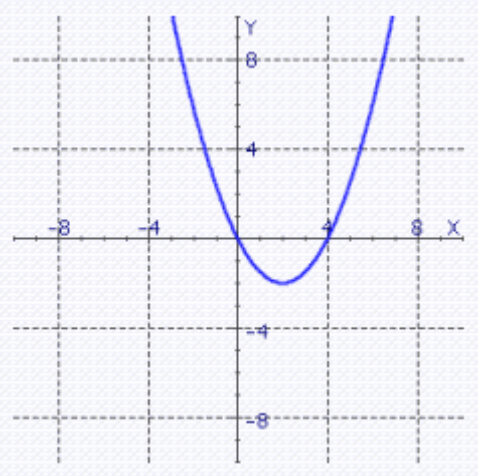
c.



b.



d.



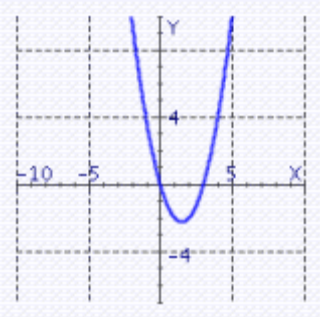
10. Use the slope-intercept form to write the equation of the line passing through the point $P(28, 2)$ and having the slope $m = -\frac{1}{2}$.

Express the answer in general form.

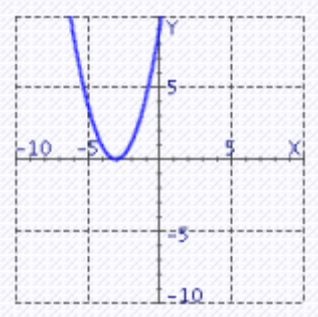
____ 11. Graph the equation.

$y = x^2 + 3x$

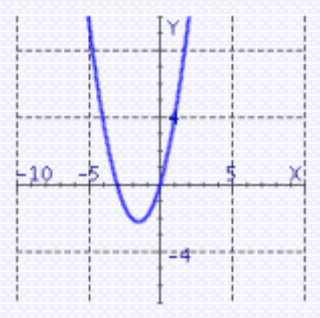
a.



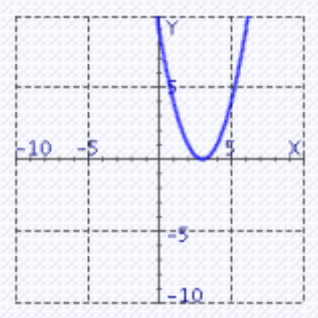
c.



b.



d.



____ 12. The power, in watts, dissipated as heat in a resistor varies jointly with the resistance, in ohms, and the square of the current, in amperes. A 10-ohm resistor carrying a current of 1 ampere dissipates 10 watts. How much power is dissipated in a 90-ohm resistor carrying a current of 6 amperes?

a. P = 9 Watts
b. P = 3,240 Watts
c. P = 90 Watts
d. P = 54 Watts
e. P = 6 Watts

13. The amount A of money on deposit for t years in an account earning simple interest is a linear function of t. Express that function as an equation if A = \$150 when t = 8 and A = \$129 when t = 5.

14. Let the function f be defined by $y = f(x)$, where x and $f(x)$ are real numbers. Find $f(8)$.

$f(x) = 14x - 92$

15. Evaluate the difference quotient for the function.

    $f(x) = 10x - 6$

____ 16. The price of computers has been dropping steadily for the past ten years. If a desktop PC cost $8,100 ten years ago, and the same computing power cost $1,100 three years ago, find the rate of decrease per year. (Assume a straight-line model).

a. $499.97 per year
b. $333.67 per year
c. $1,000.00 per year
d. $1,010.20 per year
e. $1,029.00 per year

17. Let the function f be defined by the equation $y = f(x)$, where x and $f(x)$ are real numbers. Find the range of the function $f(x) = \frac{9x + 17}{x - 32}$.

    Please enter your answer in interval notation.

____ 18. Indicate the quadrant in which the point (- 3, 9) lies.

a. quadrant II
b. quadrant I
c. quadrant IV
d. quadrant III
e. none of these

19. Find the distance between the point $P(\sqrt{8}, \sqrt{73})$ and $O(0,0)$.

20. Find the slope of the line through $P(-4,-9)$ and $Q(-6,-3)$.

____ 21. Find the domain of the function.

$f(x) = \sqrt{2x - 14}$

a. $(-\infty, 7]$
b. $(7, \infty)$
c. $(0, 7]$
d. $[7, \infty)$
e. $(-7, \infty)$

22. The percentage of 18-to-25-year-old smokers in the United States has been declining at a constant rate since 1974. If about 47% of this group smoked in 1974 and about 29% smoked in 1994, find a linear equation that models this decline. If this trend continues, what percentage will smoke in 2010.

Please enter your answer as a number without the units. Round to the nearest tenth, if necessary.

____ 23. The ratio of women to men in a mathematics class is 7 to 8. How many women are in the class if there are 48 men?

a. 8
b. 56
c. 7
d. 48
e. 42

24. The distance that an object will fall in t seconds varies directly with the square of t. An object falls 8 feet in 1 second. How long will it take to fall 72 feet?

    _____ sec

25. Find the equation in general form of the circle with the center at the origin and $r = 10$.

Gustafson/Hughes College Algebra 12e Chapter 2 Form D

Answer Section

1. $(0, 1)$
2. C
3. $\sqrt{10}$
4. B
5. 63
6. D
7. $(-11, 11)$
8. D
9. D
10. $x + 2 \cdot y = 32$
11. B
12. B
13. $A = 7 \cdot t + 94$
14. 20
15. 10
16. C
17. $(-\infty, 9) \cup (9, \infty)$
18. A
19. 9
20. –3
21. D
22. 14.6
23. E
24. 3
25. $x^2 + y^2 - 100 = 0$

Gustafson/Hughes College Algebra 12e Chapter 2 Form E

Multiple Choice/Short Answer
Identify the choice that best completes the statement or answers the question/Use the space provided to write your answer.

1. Find the *y*-intercept of the line determined by the equation.

   $-3x + 4y = 8$

   Please enter your answer as an ordered pair.

____ 2. Let the function f be defined by the equation $y = f(x)$, where x and $f(x)$ are real numbers. Find the domain and range of the function $f(x) = \sqrt{49x^2 - 30}$.

   a. domain: $(-\infty, -\frac{30}{7}] \cup [\frac{30}{7}, +\infty)$
   b. domain: $(-\infty, -\frac{30}{49}] \cup [\frac{30}{49}, +\infty)$
   c. domain: $(-\infty, -\frac{\sqrt{30}}{7}) \cup (\frac{\sqrt{30}}{7}\}, +\infty)$
   d. domain: $(-\infty, -\frac{30}{49}) \cup (\frac{30}{49}, +\infty)$
   e. domain: $(-\infty, -\frac{\sqrt{30}}{7}] \cup [\frac{\sqrt{30}}{7}, +\infty)$

3. Find the distance between the point $P(3, 5)$ and $Q(1, 4)$.

   Enter as a radical expression or an integer.

____ 4. Indicate the quadrant in which the point (3, 6) lies.

   a. quadrant II
   b. quadrant I
   c. quadrant III
   d. quadrant IV
   e. none of these

5. A printer charges a fixed setup cost, plus $0.80 for every 80 copies. If 320 copies cost $53.20, how much will it cost to print 700 copies?

   Please enter your answer rounded to the nearest whole dollar, without the units.

____ 6. The number of television sets that consumers buy depends on price. The higher the price, the fewer TVs people will buy. The equation that relates price to the number of TVs sold at that price is called a demand equation. If the demand equation for a 13-inch TV is $p = -\frac{1}{10}q + 170$, where p is the price and q is the number of TVs sold at that price, how many TVs will be sold at a price of $158?

   a. 120
   b. 182
   c. 144
   d. 274
   e. 63

7. One endpoint P (3, - 3) and the midpoint M (- 3, 2) of line segment PQ are given. Find the coordinates of the other endpoint, Q.

____ 8. In the following exercise, assume straight-line appreciation.

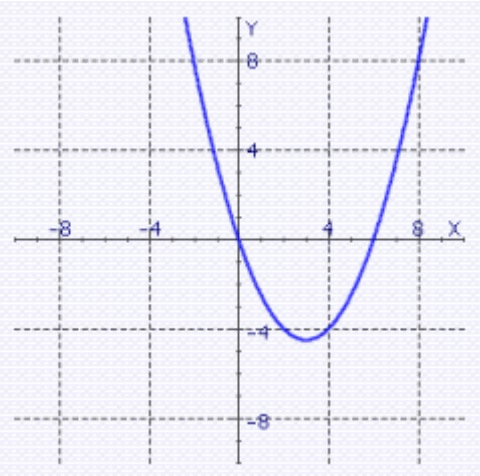
   An antique table is expected to appreciate $20.00 each year. If the table will be worth $240.00 in 3 years, what will it be worth in 11 years?

   a. $460.00
   b. $220.00
   c. $932.00
   d. $400.00
   e. $520.00

____ 9. Graph the equation.

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

a.



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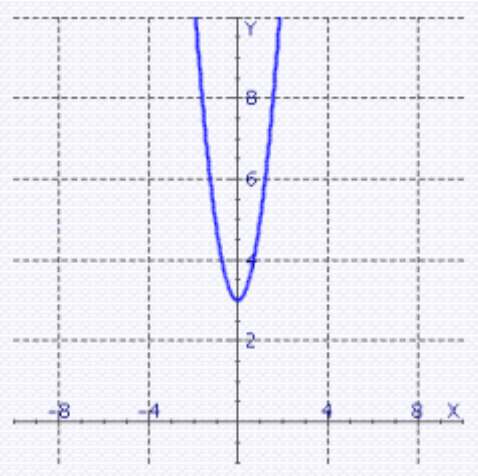

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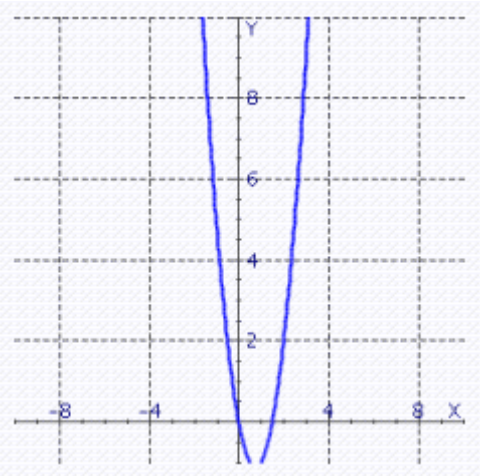

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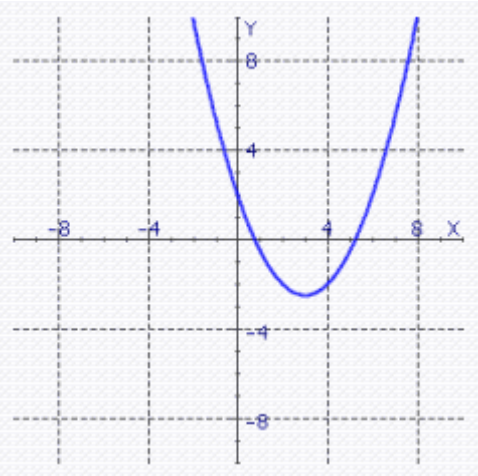
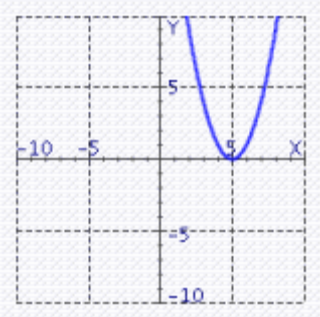


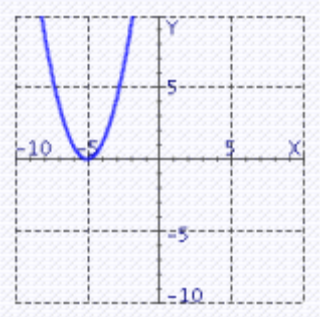
10. Use the slope-intercept form to write the equation of the line passing through the point $P(16, 1)$ and having the slope $m = -\frac{1}{4}$.

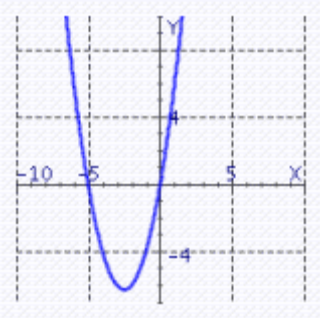
Express the answer in general form.

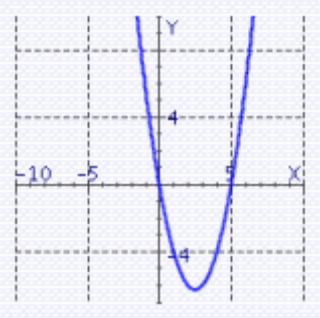
____ 11. Graph the equation.

$y = x^2 + 5x$

a. 

c. 

b. 

d. 

____ 12. The power, in watts, dissipated as heat in a resistor varies jointly with the resistance, in ohms, and the square of the current, in amperes. A 30-ohm resistor carrying a current of 1 ampere dissipates 30 watts. How much power is dissipated in a 20-ohm resistor carrying a current of 5 amperes?

a. P = 20 Watts
b. P = 500 Watts
c. P = 5 Watts
d. P = 2 Watts
e. P = 10 Watts

13. The amount A of money on deposit for t years in an account earning simple interest is a linear function of t. Express that function as an equation if A = \$83 when t = 3 and A = \$139 when t = 10.

14. Let the function f be defined by $y = f(x)$, where x and $f(x)$ are real numbers. Find $f(4)$.

    $f(x) = 22x - 63$

15. Evaluate the difference quotient for the function.

    $f(x) = 5x - 2$

____ 16. The price of computers has been dropping steadily for the past ten years. If a desktop PC cost $7,900 ten years ago, and the same computing power cost $2,000 three years ago, find the rate of decrease per year. (Assume a straight-line model).

a. $853.06 per year
b. $871.86 per year
c. $842.86 per year
d. $421.39 per year
e. $281.29 per year

17. Let the function f be defined by the equation $y = f(x)$, where x and $f(x)$ are real numbers. Find the range of the function $f(x) = \dfrac{25x + 7}{x - 20}$.

    Please enter your answer in interval notation.

____ 18. Indicate the quadrant in which the point (- 4, 3) lies.

a. quadrant III
b. quadrant IV
c. quadrant I
d. quadrant II
e. none of these

19. Find the distance between the point $P(\sqrt{7}, \sqrt{29})$ and $O(0,0)$.

20. Find the slope of the line through $P(5,2)$ and $Q(4,-3)$.

____ 21. Find the domain of the function.

$f(x) = \sqrt{7x - 28}$

a. $[4, \infty)$
b. $(-4, \infty)$
c. $(0, 4]$
d. $(-\infty, 4]$
e. $(4, \infty)$

22. The percentage of 18-to-25-year-old smokers in the United States has been declining at a constant rate since 1974. If about 47% of this group smoked in 1974 and about 29% smoked in 1994, find a linear equation that models this decline. If this trend continues, what percentage will smoke in 2007.

Please enter your answer as a number without the units. Round to the nearest tenth, if necessary.

____ 23. The ratio of women to men in a mathematics class is 7 to 2. How many women are in the class if there are 12 men?

a. 12
b. 2
c. 7
d. 42
e. 14

24. The distance that an object will fall in t seconds varies directly with the square of t. An object falls 5 feet in 1 second. How long will it take to fall 45 feet?

    _____ sec

25. Find the equation in general form of the circle with the center at the origin and $r = 5$.

Gustafson/Hughes College Algebra 12e Chapter 2 Form E

Answer Section

1. $(0, 2)$
2. E
3. $\sqrt{5}$
4. B
5. 57
6. A
7. $(-9, 7)$
8. D
9. A
10. $x + 4 \cdot y = 20$
11. B
12. B
13. $A = 8 \cdot t + 59$
14. 25
15. 5
16. C
17. $(-\infty, 25) \cup (25, \infty)$
18. D
19. 6
20. 5
21. A
22. 17.3
23. D
24. 3
25. $x^2 + y^2 - 25 = 0$

Gustafson/Hughes College Algebra 12e Chapter 2 Form F

Multiple Choice/Short Answer
Identify the choice that best completes the statement or answers the question/Use the space provided to write your answer.

1. Find the *y*-intercept of the line determined by the equation.

   $-7x + 10y = 10$

   Please enter your answer as an ordered pair.

____ 2. Let the function f be defined by the equation $y = f(x)$, where x and $f(x)$ are real numbers. Find the domain and range of the function $f(x) = \sqrt{36x^2 - 22}$.

   a. domain: $(-\infty, -\frac{22}{36}] \cup [\frac{22}{36}, +\infty)$
   b. domain: $(-\infty, -\frac{22}{36}) \cup (\frac{22}{36}, +\infty)$
   c. domain: $(-\infty, -\frac{\sqrt{22}}{6}] \cup [\frac{\sqrt{22}}{6}, +\infty)$
   d. domain: $(-\infty, -\frac{\sqrt{22}}{6}) \cup (\frac{\sqrt{22}}{6}\}, +\infty)$
   e. domain: $(-\infty, -\frac{22}{6}] \cup [\frac{22}{6}, +\infty)$

3. Find the distance between the point $P(4, 2)$ and $Q(3, 4)$.

   Enter as a radical expression or an integer.

____ 4. Indicate the quadrant in which the point (8, 4) lies.

   a. quadrant IV
   b. quadrant I
   c. quadrant II
   d. quadrant III
   e. none of these

5. A printer charges a fixed setup cost, plus $0.40 for every 40 copies. If 400 copies cost $64.00, how much will it cost to print 1200 copies?

   Please enter your answer rounded to the nearest whole dollar, without the units.

____ 6. The number of television sets that consumers buy depends on price. The higher the price, the fewer TVs people will buy. The equation that relates price to the number of TVs sold at that price is called a demand equation. If the demand equation for a 13-inch TV is $p = -\frac{1}{10}q + 170$, where p is the price and q is the number of TVs sold at that price, how many TVs will be sold at a price of $160?

   a. 43
   b. 180
   c. 120
   d. 272
   e. 100

7. One endpoint P (4, - 2) and the midpoint M (- 5, 7) of line segment PQ are given. Find the coordinates of the other endpoint, Q.

____ 8. In the following exercise, assume straight-line appreciation.

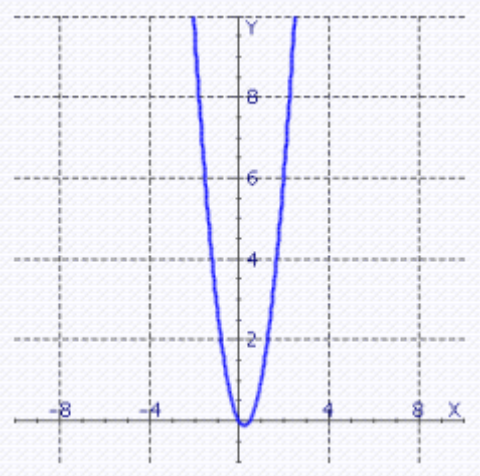
   An antique table is expected to appreciate $20.00 each year. If the table will be worth $100.00 in 4 years, what will it be worth in 5 years?

   a. $100.00
   b. $279.60
   c. $120.00
   d. $200.00
   e. $280.00

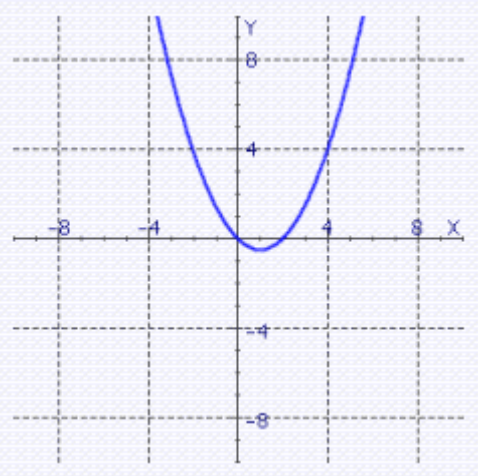
____ 9. Graph the equation.

$$y = \frac{1}{2}x^2 - x$$

a.



c.



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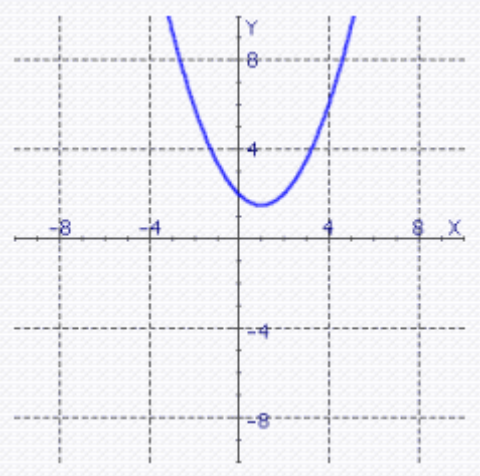
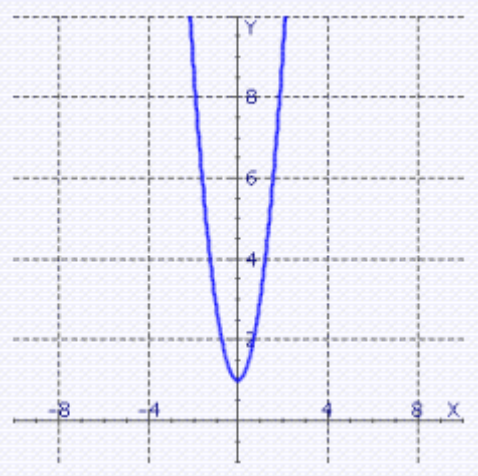


d.

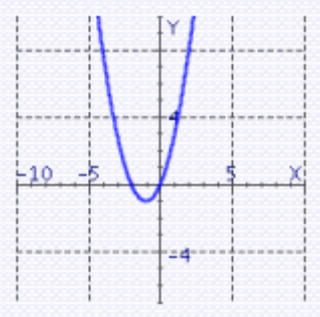


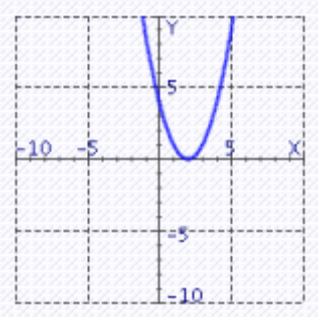
10. Use the slope-intercept form to write the equation of the line passing through the point $P(36, 1)$ and having the slope $m = -\frac{1}{2}$.

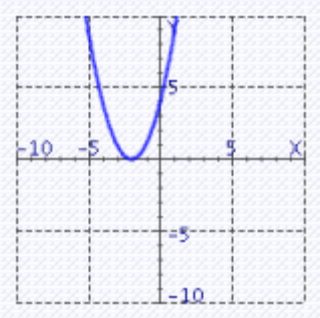
Express the answer in general form.

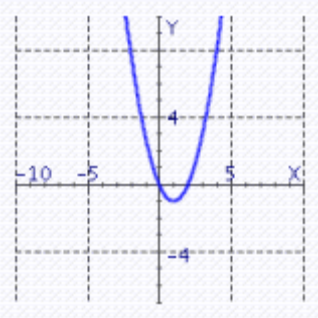
____ 11. Graph the equation.

$y = x^2 + 2x$

a. 

c. 

b. 

d. 

____ 12. The power, in watts, dissipated as heat in a resistor varies jointly with the resistance, in ohms, and the square of the current, in amperes. A 25-ohm resistor carrying a current of 1 ampere dissipates 25 watts. How much power is dissipated in a 90-ohm resistor carrying a current of 8 amperes?

a. P = 9 Watts
b. P = 8 Watts
c. P = 5,760 Watts
d. P = 72 Watts
e. P = 90 Watts

13. The amount A of money on deposit for t years in an account earning simple interest is a linear function of t. Express that function as an equation if A = \$110 when t = 4 and A = \$138 when t = 8.

14. Let the function f be defined by $y = f(x)$, where x and $f(x)$ are real numbers. Find $f(4)$.

    $f(x) = 10x - 77$

15. Evaluate the difference quotient for the function.

    $f(x) = 7x - 16$

____ 16. The price of computers has been dropping steadily for the past ten years. If a desktop PC cost $7,900 ten years ago, and the same computing power cost $1,400 three years ago, find the rate of decrease per year. (Assume a straight-line model).

a. $928.57 per year
b. $309.86 per year
c. $957.57 per year
d. $938.77 per year
e. $464.25 per year

17. Let the function f be defined by the equation $y = f(x)$, where x and $f(x)$ are real numbers. Find the range of the function $f(x) = \frac{23x + 7}{x - 49}$.

    Please enter your answer in interval notation.

____ 18. Indicate the quadrant in which the point (- 2, 5) lies.

a. quadrant IV
b. quadrant II
c. quadrant III
d. quadrant I
e. none of these

19. Find the distance between the point $P(\sqrt{3}, \sqrt{97})$ and $O(0,0)$.

20. Find the slope of the line through $P(9,-3)$ and $Q(-9,123)$.

____ 21. Find the domain of the function.

$f(x) = \sqrt{13x - 13}$

a. $(1, \infty)$
b. $(-\infty, 1]$
c. $(-1, \infty)$
d. $(0, 1]$
e. $[1, \infty)$

22. The percentage of 18-to-25-year-old smokers in the United States has been declining at a constant rate since 1974. If about 47% of this group smoked in 1974 and about 29% smoked in 1994, find a linear equation that models this decline. If this trend continues, what percentage will smoke in 2003.

Please enter your answer as a number without the units. Round to the nearest tenth, if necessary.

____ 23. The ratio of women to men in a mathematics class is 5 to 8. How many women are in the class if there are 48 men?

a. 48
b. 30
c. 40
d. 5
e. 8

24. The distance that an object will fall in t seconds varies directly with the square of t. An object falls 4 feet in 1 second. How long will it take to fall 16 feet?

    _____ sec

25. Find the equation in general form of the circle with the center at the origin and $r = 3$.

Gustafson/Hughes College Algebra 12e Chapter 2 Form F

Answer Section

1. $(0, 1)$
2. C
3. $\sqrt{5}$
4. B
5. 72
6. E
7. $(-14, 16)$
8. C
9. C
10. $x + 2 \cdot y = 38$
11. A
12. C
13. $A = 7 \cdot t + 82$
14. –37
15. 7
16. A
17. $(-\infty, 23) \cup (23, \infty)$
18. B
19. 10
20. –7
21. E
22. 20.9
23. B
24. 2
25. $x^2 + y^2 - 9 = 0$