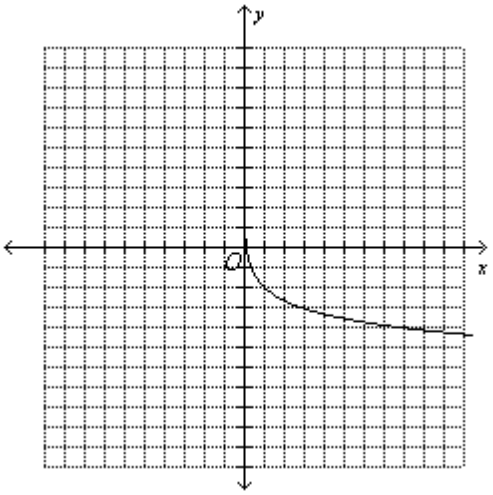
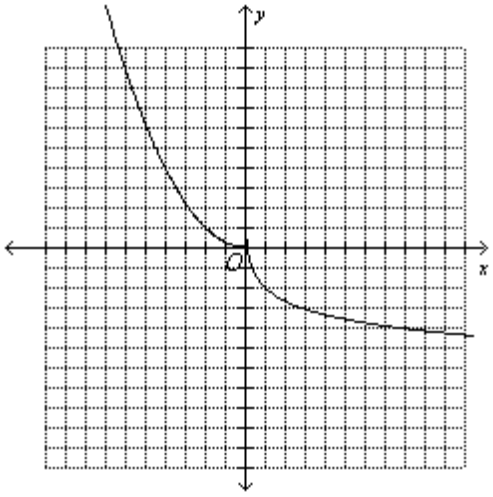
Name:_____ Class:_____ Date:_____

Precalculus-G11-Ch.0-H.W

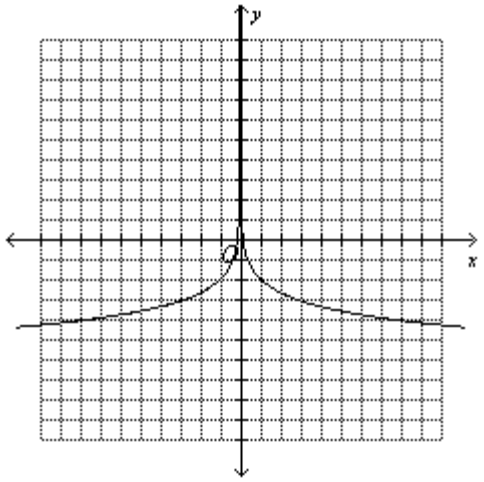
1. The graph below is a portion of a complete graph. Which graph below is the complete graph assuming it is an even function?



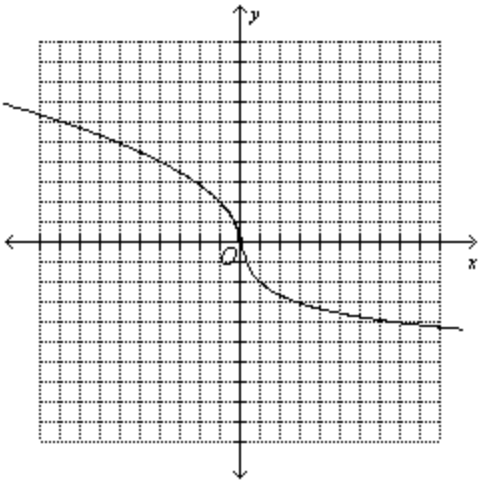
a.



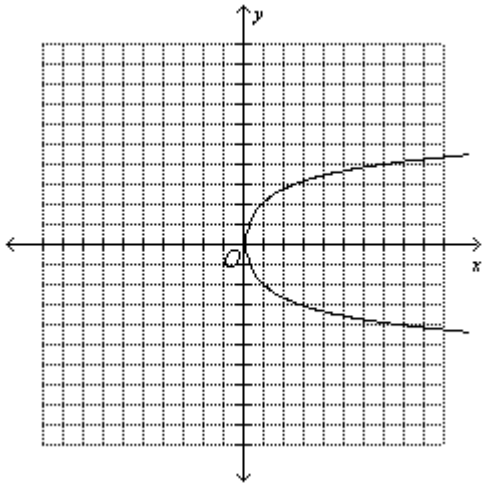
b.



c.



d.



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2. Use the domain and range of each of the following relations to determine which is a function.

a. {(–4, 3), (–2, –1), (–4, 8)}
b. {(–4, 3), (–2, –1), (–7, 8)}
c. {–4, –2, –7, 7}
d. {(–4, 3), (–2, –1), (–2, –8), (–7, 8)}

3. Choose the phrase that best describes the matrix.

$$\begin{bmatrix} 9 & 8 & -7 \\ -2 & -4 & 9 \\ -7 & 8 & -5 \end{bmatrix}$$

a. augmented matrix
b. coefficient matrix
c. augmented matrix in row-echelon form
d. none of the above

4. If $\cos x = \frac{\sqrt{3}}{2}$**, find** $\cos(x + \pi)$**.**

a. $\frac{-\sqrt{3} - 1}{2}$
b. $-\frac{\sqrt{3}}{2}$
c. $-\frac{1}{2}$
d. $\frac{\sqrt{3}}{2}$

5. Simplify $\frac{1 - \sec^2 \theta}{\tan^2 \theta}$**.**

a. $\tan^2 \theta$
b. $\csc^2 \theta$
c. –1
d. 1

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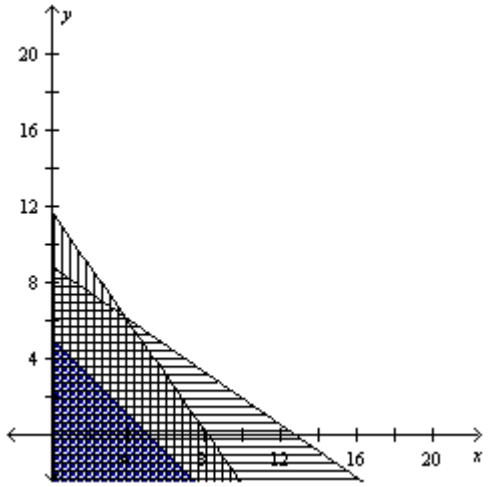
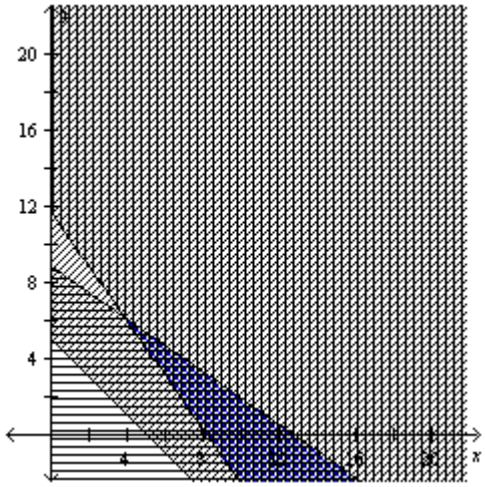
6. Graph the region corresponding to the solution of the system of constraints.

$f(x, y) = 3y + x$
$x \geq 0$
$y \geq -2$
$9x + 13y \leq 114$
$10x + 7y \leq 82$
$2x + 2y \geq 10$

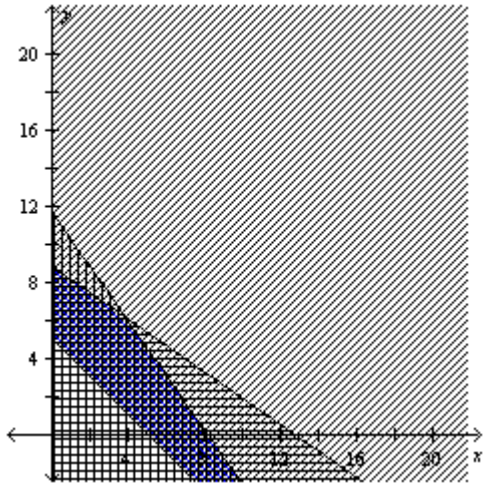
a.



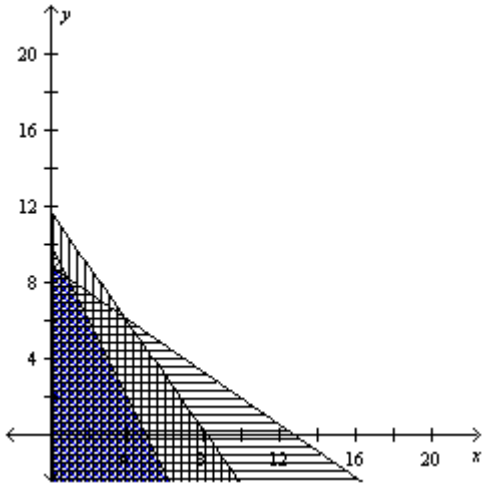
b.



c.



d.



7. The graph of the equation $x = y^2 + 7$ is symmetric with respect to which of the following?

a. the line $y = x$ b. the line $y = -x + 7$
c. the y-axis d. the x-axis

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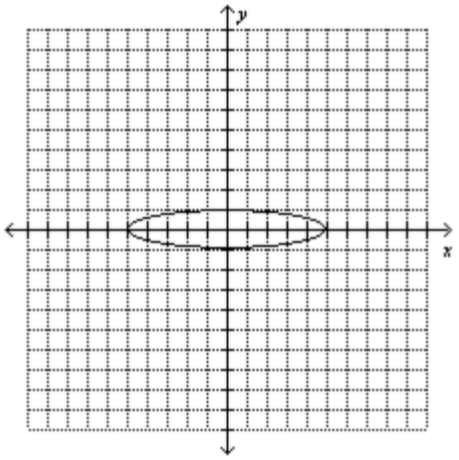
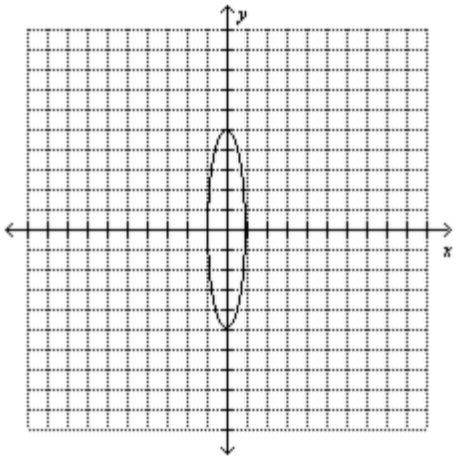
Find the maximum and minimum values of the objective function $f(x, y)$ and for what values of x and y they occur, subject to the given constraints.

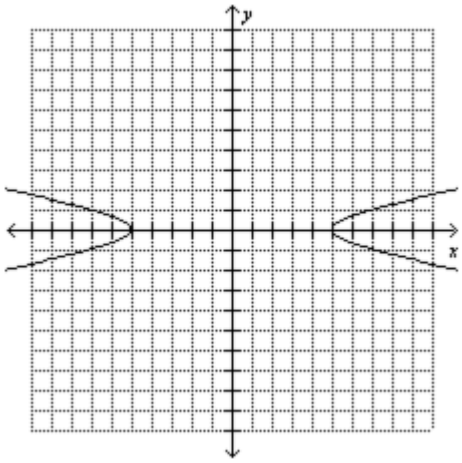
8. $f(x, y) = x + 10y$
$x \geq 0$
$y \geq 0$
$3x + 6y \leq 84$
$9x + 3y \leq 72$

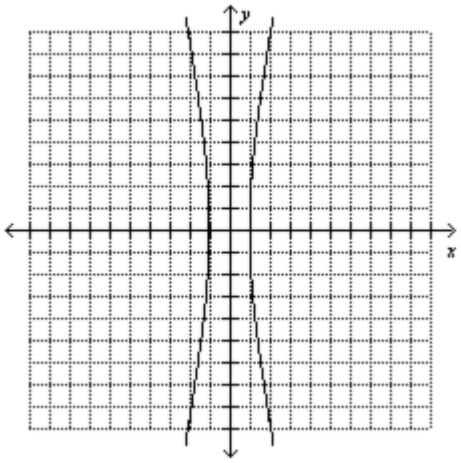
a. max at (0, 14) = 140, min at (0, 0) = 0
b. max at (5, 15) = 155, min at (0, 0) = 0
c. max at (8, 0) = 8, min at (0, 0) = 0
d. max at (4, 12) = 124, min at (0, 0) = 0

9. Which of the following is the graph of $25x^2 + y^2 = 25$?

a.


b.


c.


d.


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Precalculus-G11-Ch.0-H.W

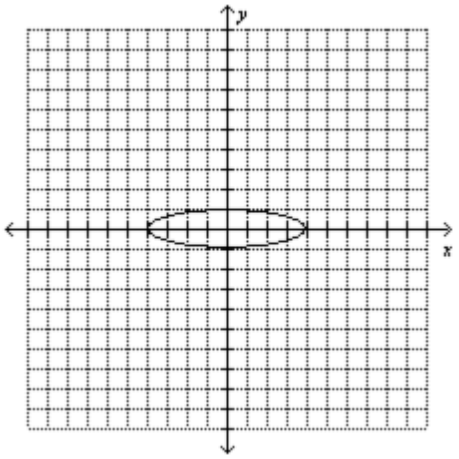
10. Use Cramer's Rule to find the solution of the system of linear equations, if a unique solution exists.

$-2x - 8y = 76$
$-7x - y = 77$

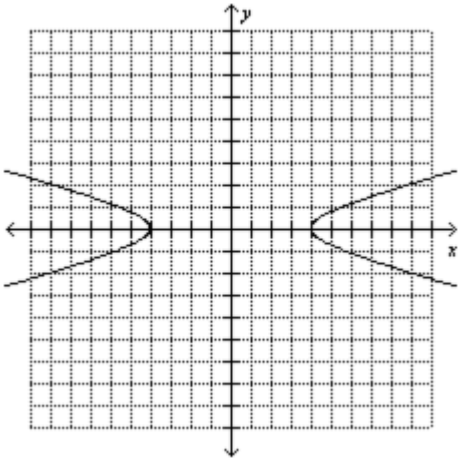
a. (–10, –7) b. (–13, –6)
c. (–10, –6) d. no unique solution

11. Which of the following is the graph of $x^2 + 16y^2 = 16$?

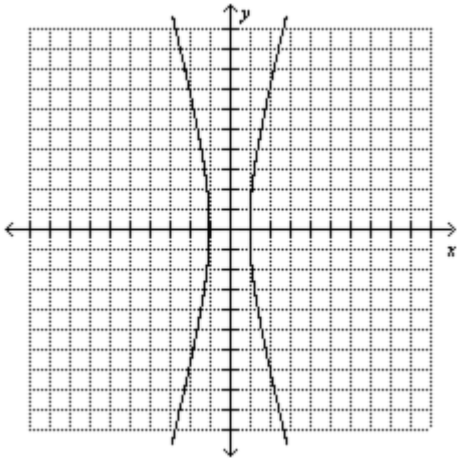
a.



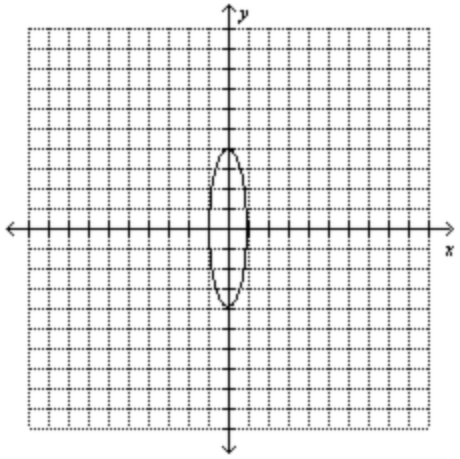
b.



c.



d.



12. Which statement is true for the graph of $f(x) = 2x^3 - 6x^2 - 48x + 24$?

a. (4, –140) is a relative minimum; (–2, 77) is a relative maximum
b. (4, –136) is a relative minimum; (–2, 80) is a relative maximum
c. (–2, 80) is a relative minimum; (4, –136) is a relative maximum
d. (–2, 77) is a relative minimum; (4, –140) is a relative maximum

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Precalculus-G11-Ch.0-H.W

13. Use an inverse matrix to solve the system of equations, if possible.

$x - 5y + 2z = -33$
$-x - 4y + z = -42$
$x - 9y - 6z = -113$

a. $(8, -1, 5)$ b. $(7, 10, 5)$
c. $(8, 9, 2)$ d. no solution

14. Find the component form of the vector v with magnitude 3 and direction angle 41°.

a. <–2.96, –0.48> b. <1.97, 2.26>
c. <0.25, 0.22> d. <2.26, 1.97>

15. Find the projection of u = <–6, 2> onto v = <–3, 2>.

a. $\left\langle -\frac{11}{24}, \frac{11}{36} \right\rangle$ b. $\left\langle -\frac{132}{13}, \frac{44}{13} \right\rangle$
c. $\left\langle -\frac{13}{66}, \frac{13}{44} \right\rangle$ d. $\left\langle -\frac{66}{13}, \frac{44}{13} \right\rangle$

16. Which of the following statements is (are) true for all positive integers?

1) $\frac{1}{5} + \frac{1}{5^2} + \frac{1}{5^3} + \ldots + \frac{1}{5^n} = \frac{1}{3}\left(1 - \frac{1}{2^n}\right)$

2) $9^n - 1$ is divisible by 7.

a. Both statements are true. b. None of the statements are true.
c. Only the second statement is true. d. Only the first statement is true.

17. If $\csc\theta = -\frac{5}{4}$ **on the interval** $(270°, 360°)$**, find tan** θ**.**

a. $-\frac{4}{3}$

b. $\frac{3}{4}$

c. $\frac{4}{3}$

d. $-\frac{4}{5}$

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Precalculus-G11-Ch.0-H.W

18. Choose the phrase that best describes the matrix.

$$\begin{bmatrix} -1 & -3 & -1 \\ 9 & -9 & -1 \\ -1 & -3 & 4 \end{bmatrix}$$

a. coefficient matrix b. augmented matrix in row-echelon form
c. augmented matrix d. none of the above

19. Find the direction angle of 2i + 12j.

a. 88.10° b. 260.54°
c. 170.54° d. 80.54°

20. While moving, Jacob pushes a dolly up a ramp with a constant force of 85 N. If the ramp has an incline of 10° with the horizontal, what amount of work (in joules) will Jacob have do to push the dolly 30 meters?

a. about 443 joules b. about 2511 joules
c. about 436 joules d. about 2550 joules

21. Find the volume of the parallelepiped with adjacent edges t = 9j – 6j + 2k, u = i – j + 3k and v = –2i – 10j + 5k.

a. 209 cubic units b. 53 cubic units
c. 11 cubic units d. 267 cubic units

22. Solve the system of equations using Gauss-Jordan elimination.

$-4x + 6y - 2z = -54$
$-14x + 18y - 12z = -140$
$-10x + 14y - 6z = -122$

a. $x = 4$, $y = -8$, and $z = -5$ b. $x = -9$, $y = 7$, and $z = 66$
c. $x = -7$, $y = 9$, and $z = -7$ d. no solution

23. SCIENCE The amount of force needed to keep a stationary object on a flat surface from moving is called static friction. If a book weighs *p* pounds and it is on a flat surface that is at an angle of θdegrees, the coefficient of static friction *c* for the book is given by $cp \csc \theta = p \cot \theta$. Which of the following is an equivalent equation for *c*?

a. $c = \cos \theta$
b. $c = \cot \theta$
c. $c = \sin \theta$
d. $c = \tan \theta$

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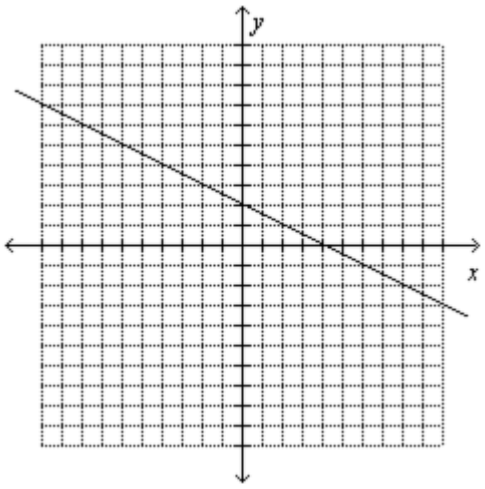
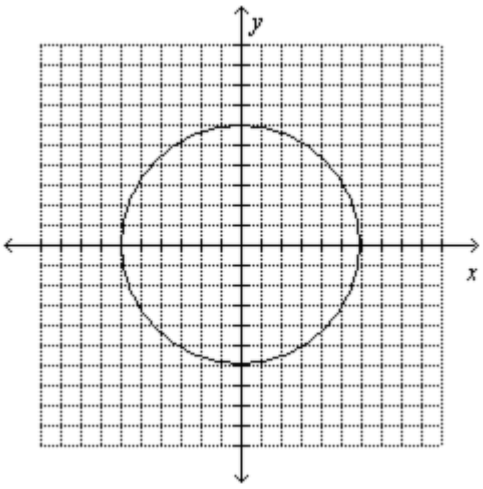
Precalculus-G11-Ch.0-H.W

24. Which of the following graphs is a function?

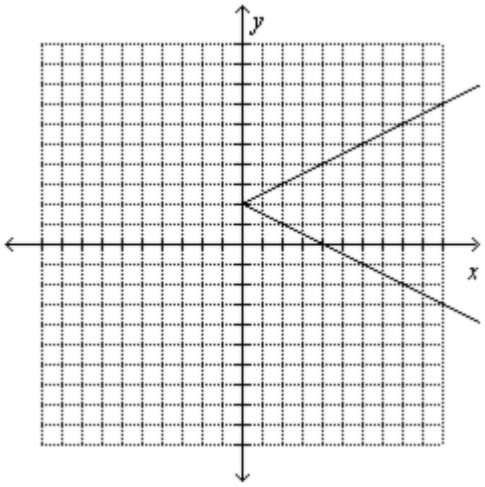
a.



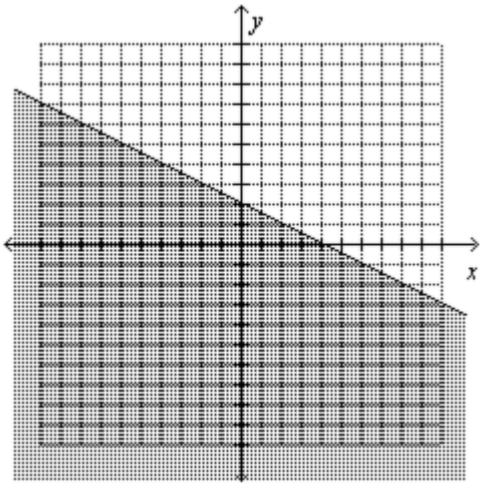
b.



c.



d.



25. Which of the following statements is (are) true for all positive integers?

1) $\frac{1}{1\cdot 2}+\frac{1}{2\cdot 3}+\frac{1}{3\cdot 4}+\ldots+\frac{1}{n(n+1)}=\frac{n}{n+1}$

2) $\frac{1}{5}+\frac{1}{5^2}+\frac{1}{5^3}+\ldots+\frac{1}{5^n}=\frac{1}{4}\left(1-\frac{1}{5^n}\right)$

a. Both statements are true.
b. None of the statements are true.
c. Only the first statement is true.
d. Only the second statement is true.

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Precalculus-G11-Ch.0-H.W

26. Choose the phrase that best describes the matrix.

$$\left[\begin{array}{ccc|c} 1 & 2 & -5 & -9 \\ 0 & 1 & 0 & -1 \\ 0 & 0 & 1 & 6 \end{array}\right]$$

a. augmented matrix in row-echelon form
b. augmented matrix
c. coefficient matrix
d. none of the above

27. Identify the function for which an inverse function exists.

a. $f(x) = 5x^2 - 3$
b. $f(x) = |x - 1|$
c. $f(x) = \sqrt{x + 2}$
d. $f(x) = [[x + 5]]$

28. Use an inverse matrix to solve the system of equations, if possible.

$-6x + 5y + 4z = 0$
$5x + 7y + 4z = -74$
$4x + 2y - 4z = -16$

a. $(-6, -4, -4)$
b. $(-6, -4, -4)$
c. $(-6, 5, -4)$
d. no solution

Find the maximum and minimum values of the objective function $f(x, y)$ and for what values of x and y they occur, subject to the given constraints.

29. $f(x, y) = 4x + 6y$
$y \leq -4x - 4$
$y \leq 2x - 10$
$y \geq -4x + 20$

a. min at $(1, -8) = -44$, max at $(5, 0) = 20$
b. min at $(1, -8) = -44$, no max
c. max at $(1, -8) = -44$, no min
d. max at $(5, 0) = 20$, no min

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Find the maximum and minimum values of the objective function $f(x, y)$ and for what values of x and y they occur, subject to the given constraints.

30. $f(x, y) = x + 7y$
$x \geq 0$
$y \geq 0$
$3x + 9y \leq 99$
$9x + 2y \leq 72$

a. max at (7, 12) = 91, min at (0, 0) = 0
b. max at (8, 0) = 8, min at (0, 0) = 0
c. max at (6, 9) = 69, min at (0, 0) = 0
d. max at (0, 11) = 77, min at (0, 0) = 0

31. Which of the following statements is (are) true for all positive integers?

1) $7^n - 2^n$ **is divisible by 5.**
2) $n^2 + 2n$ **is divisible by 2.**

a. Both statements are true.
b. None of the statements are true.
c. Only the first statement is true.
d. Only the second statement is true.

32. Solve the system of equations.

$-3x + 3y - 9z + 42w = -42$
$-6x + 3y - 18z + 96w = -54$
$x - y + 2z - 10w = 11$

a. $(-8 - w, -7 + 10w, -2 - 10w, w)$
b. $(4 + 4w, 4 + 4w, 3 - 2w, w)$
c. $(4, -133, 1, 9)$
d. $(-5 + 6w, -10 + 4w, 3 + 4w, w)$

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