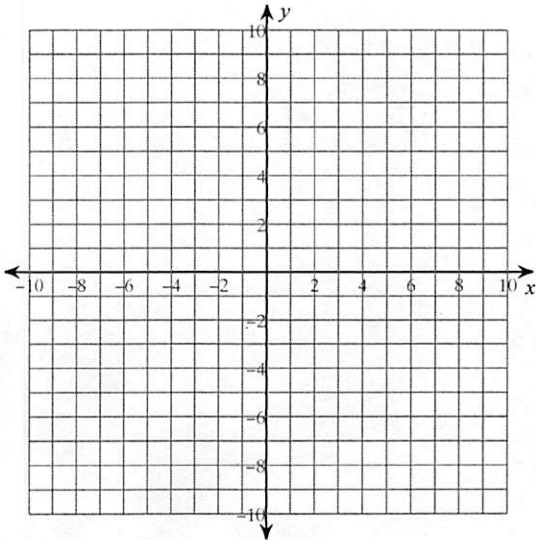


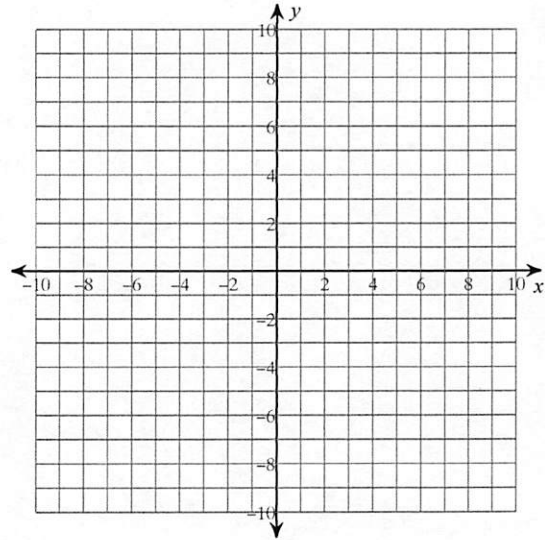
Review Chapter 3

Solve each system by graphing.

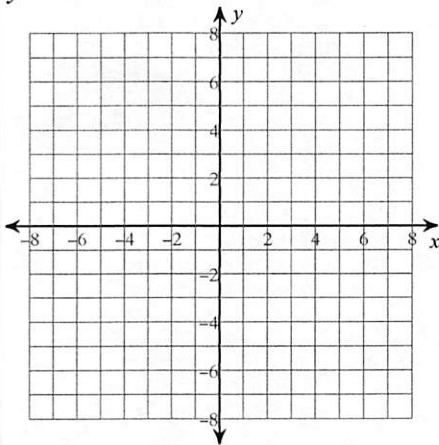
$$1) \begin{aligned} 5x + 4y &= 12 \\ y &= 8 \end{aligned}$$



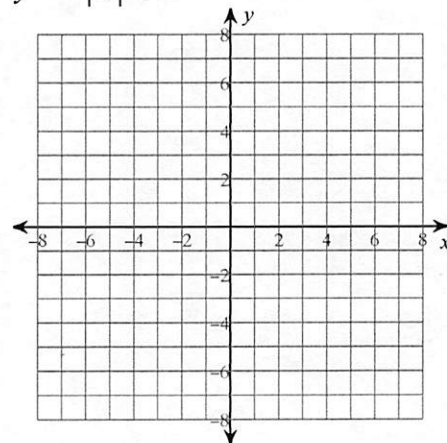
$$2) \begin{aligned} y &= -4x - 1 \\ y &= -4x + 7 \end{aligned}$$



$$3) \begin{aligned} y &= x^2 - 2 \\ y &= x \end{aligned}$$



$$4) \begin{aligned} x^2 + (y - 2)^2 &= 9 \\ y &= -|x| + 5 \end{aligned}$$



Solve each system by substitution.

$$5) \begin{aligned} y &= 3 \\ -2x - y &= -19 \end{aligned}$$

$$6) \begin{aligned} 21x + 3y &= -57 \\ 7x + y &= -19 \end{aligned}$$

$$7) \begin{aligned} 4x - y &= -17 \\ x + 7y &= 3 \end{aligned}$$

$$8) \begin{aligned} x + 2y &= 6 \\ -5x - 4y &= -18 \end{aligned}$$

$$\begin{aligned} 9) \quad x + 2y &= 4 \\ -2x - 4y &= -16 \end{aligned}$$

$$\begin{aligned} 10) \quad 2x + y &= 5 \\ y &= x^2 - 3 \end{aligned}$$

$$\begin{aligned} 11) \quad x^2 + y &= 8 \\ y &= x^2 \end{aligned}$$

$$\begin{aligned} 12) \quad x^2 + y^2 &= 125 \\ 2x + y &= 0 \end{aligned}$$

Solve each system by elimination.

$$\begin{aligned} 13) \quad x - y &= -11 \\ -6x - 9y &= -24 \end{aligned}$$

$$\begin{aligned} 14) \quad -3x - 18y &= 9 \\ x - 9y &= -3 \end{aligned}$$

$$\begin{aligned} 15) \quad 5x + 2y &= -12 \\ -6x + 5y &= 7 \end{aligned}$$

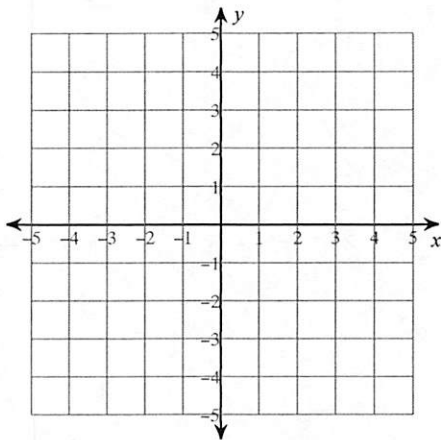
$$\begin{aligned} 16) \quad -5x - 4y &= -20 \\ -3x + 5y &= -12 \end{aligned}$$

$$\begin{aligned} 17) \quad y &= 2x^2 + 3x - 5 \\ y &= x^2 + 2x + 1 \end{aligned}$$

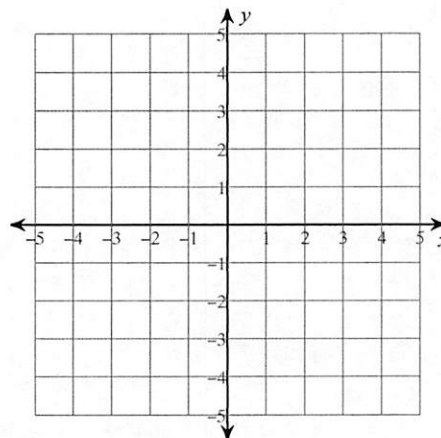
$$\begin{aligned} 18) \quad 3x^2 - y^2 &= 11 \\ x^2 + 4y^2 &= 8 \end{aligned}$$

Sketch the solution to each system of inequalities.

$$\begin{aligned} 19) \quad 2x - 3y &> -9 \\ x + y &> -2 \end{aligned}$$

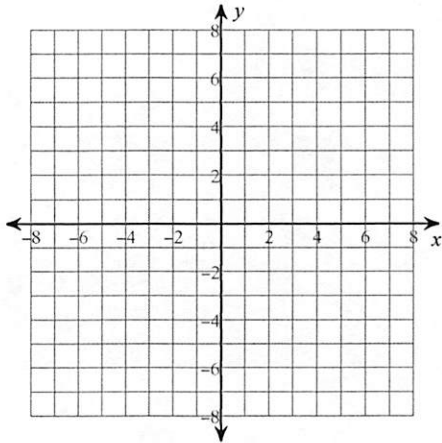


$$\begin{aligned} 20) \quad y &> -\frac{1}{3}x + 2 \\ y &> \frac{2}{3}x - 1 \end{aligned}$$

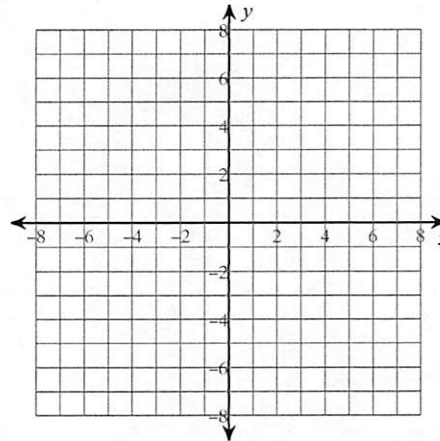


Sketch the solution to each system of inequalities.

21) $y \geq 4^x - 5$
 $y \leq \frac{1}{2}x - 2$
 $x \geq -4$

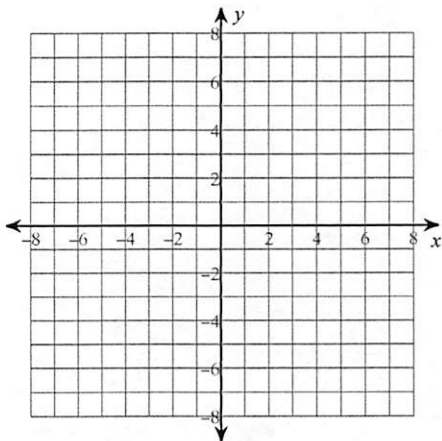


22) $y \leq \log(x - 3)$
 $y \geq -3$
 $x \leq 6$

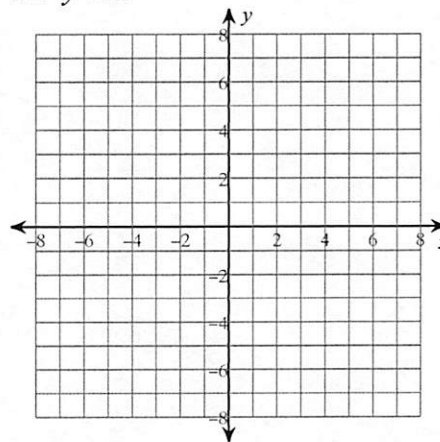


Graph each system of inequalities. Name the coordinates of the vertices of the region formed by each system.

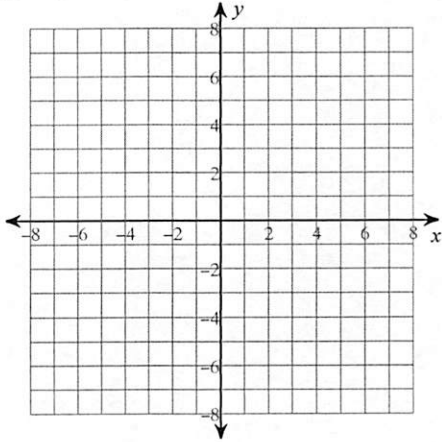
23) $y \geq |x + 3| - 3$
 $(x + 3)^2 + (y - 2)^2 \leq 25$
 $y \leq 2$



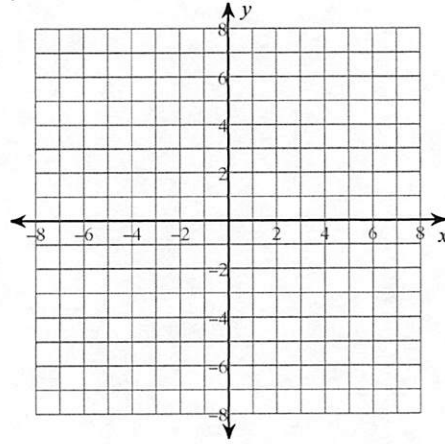
24) $3x - y \leq 7$
 $y \leq 8$
 $x + y \geq 1$



25) $y \geq |x| - 3$
 $x^2 + y \leq 3$
 $x \leq 0$

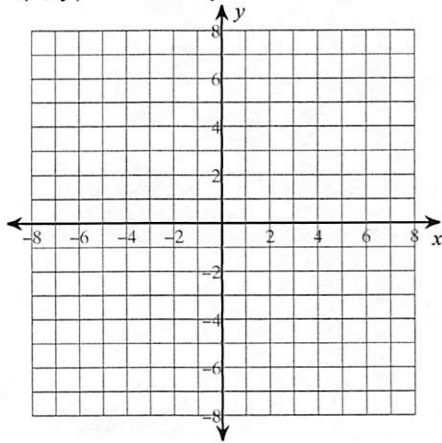


26) $x + y \geq 2$
 $x^2 + y \leq 4$
 $y \leq 3$

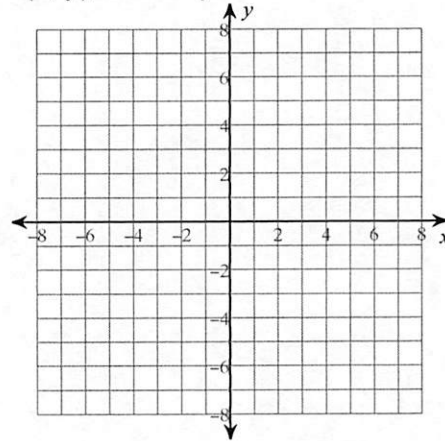


Graph each system of inequalities. Name the coordinates of the vertices of the feasible region. Find the maximum and minimum values of the given function for this region.

27) $y \leq x + 6$
 $y \geq -\frac{1}{2}x$
 $2x + y \leq 6$
 $f(x, y) = -x + 3y$



28) $x \geq 0$
 $y \geq 0$
 $y \leq 6$
 $y \leq -3x + 9$
 $f(x, y) = 4x + y$

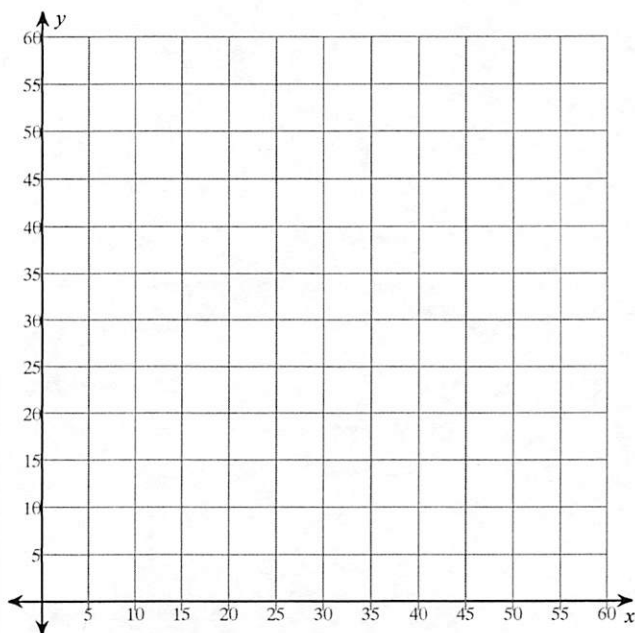


29) The perimeter of a rectangle is 48cm^2 , the longer side is 3 more than twice the smaller. Find the dimensions of the rectangle.

30) The difference of two numbers is 35. Their sum is 143. Find the numbers.

31) The sum of two numbers is 12. The difference of 3 times the first and twice the second is -9. Find the numbers.

- 32) Brenda and Imani each improved their yards by planting daylilies and shrubs. They bought their supplies from the same store. Brenda spent \$79 on 8 daylilies and 9 shrubs. Imani spent \$38 on 12 daylilies and 2 shrubs. Find the cost of one daylily and the cost of one shrub.
- 33) Gabriella's school is selling tickets to the annual talent show. On the first day of ticket sales the school sold 13 adult tickets and 13 child tickets for a total of \$273. The school took in \$202 on the second day by selling 10 adult tickets and 9 child tickets. What is the price each of one adult ticket and one child ticket?
- 34) The area of a parking is 600 square meters. A car requires 6 square meters and a bus requires 30 square meters. The attendant can handle only 60 vehicles. If a car is charged \$2.50 and a bus \$7.50 what is the maximum cost the attendant can collect?
- a) If Cars are x and Buses are y , what is the function to maximize the cost?
- b) Write the system of equations for the constraints given:
- c) Graph the function to find the number of cars and buses to maximize income.



35) A farmer has 10 acres to plant in wheat and rye. He has to plant at least 7 acres. However, he has only \$1200 to spend and each acre of wheat costs \$200 to plant and each acre of rye costs \$100 to plant. Moreover, the farmer has to get the planting done in 12 hours and it takes an hour to plant an acre of wheat and 2 hours to plant an acre of rye. If the profit is \$500 per acre of wheat and \$300 per acre of rye, how many acres of each should be planted to maximize profits?

a) Let Wheat represent the x value and Rye represent the y value, what is the function to maximize the cost?

b) Write the system of equations for the constraints given:

c) Graph the function to find the amount of wheat and rye to plant to maximize the production of crops.

