

**Solve the following system by substitution:**

1- 
$$\begin{cases} x - y = 0 \\ 5x - 3y = 10 \end{cases}$$

2- 
$$\begin{cases} \frac{1}{5}x + \frac{1}{2}y = 7 \\ x + y = 20 \end{cases}$$

3- 
$$\begin{cases} y = 4 - x^2 \\ y = x^2 - 4 \end{cases}$$

**Solve the following system by elimination:**

4- 
$$\begin{cases} 3x - 2y = 6 \\ -6x + 4y = -12 \end{cases}$$

5- 
$$\begin{cases} 5x + 3y = 18 \\ 2x - 7y = -1 \end{cases}$$

6- 
$$\begin{cases} x^2 + 2y^2 = 2 \\ 2x^2 - 3y = 15 \end{cases}$$

Use the method of back substitution to solve the system:

7- 
$$\begin{cases} x - 2y + 3z = 9 \\ y + 3z = 5 \\ z = 2 \end{cases}$$

**Solve the system of linear equations:**

8- 
$$\begin{cases} x - 3y + z = 1 \\ 2x - y - 2z = 0 \\ x + 2y - 3z = -1 \end{cases}$$

9- 
$$\begin{cases} x - 2y - 3z = 5 \\ 2x + y - z = 5 \\ 4x - 3y - 2z = 5 \end{cases}$$

$$10. \begin{cases} 2x + y - z = -8 \\ -x + y + z = 3 \\ -2x + 4z = 18 \end{cases}$$

$$11. \begin{cases} 2x + 3y - 12z = 1 \\ x - 2y + z = 4 \\ 4x + y - 14z = 7 \end{cases}$$

Find the partial fractions for each of the following:

$$12. \frac{(3x+1)}{(x^2-2x-15)}$$

$$13. \frac{(x+4)}{(x^3-x^2+4x-4)}$$

$$14. \frac{3x}{(x-2)^2}$$

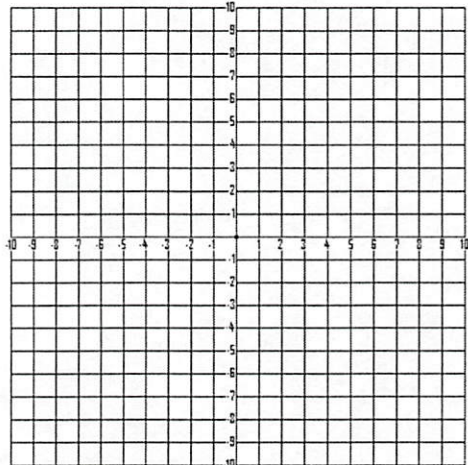
$$15. \frac{(-x+10)}{(x^2+x-12)}$$

$$16. \frac{(2x-4)}{x(x-1)^2}$$

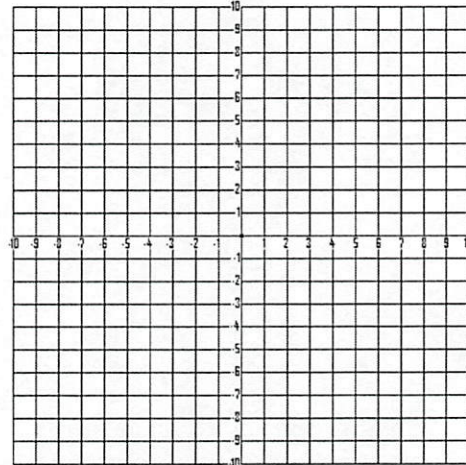
$$17. \frac{(2x-1)}{(x^3+x)}$$

Graph the following inequalities. If the region is bounded find the coordinates of the vertices.

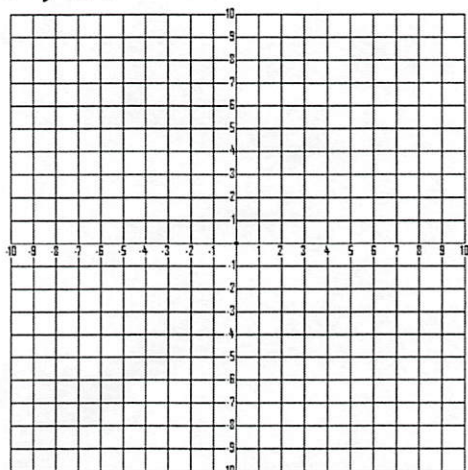
18.  $(x + 3)^2 + (y - 2)^2 < 25$



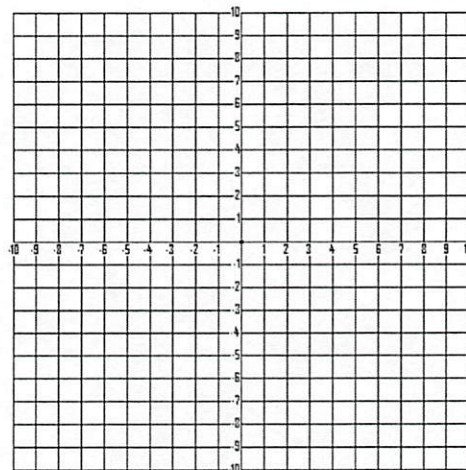
19.  $2x + 3y \leq 6$



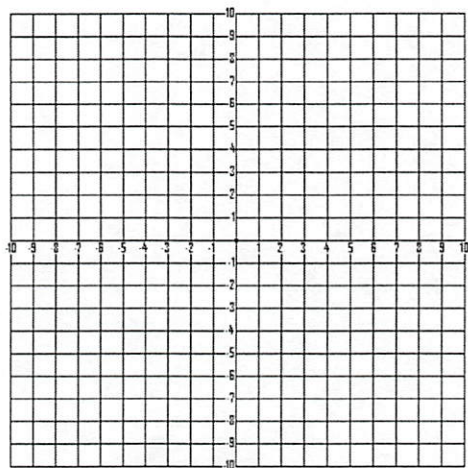
20. 
$$\begin{cases} x + y \leq 5 \\ x \geq 2 \\ y \geq 0 \end{cases}$$



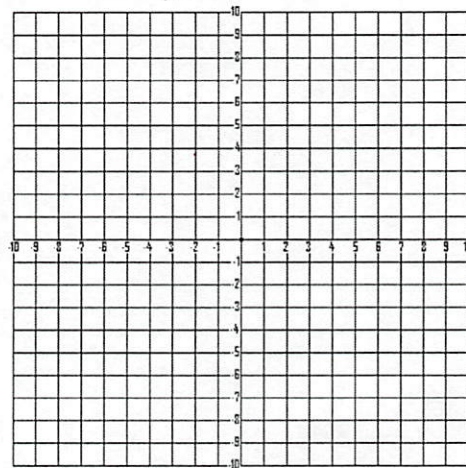
21. 
$$\begin{cases} x^2 + y \leq 8 \\ x - 2y \geq -6 \end{cases}$$



22. 
$$\begin{cases} x^2 + y^2 < 25 \\ x + 2y \geq 5 \end{cases}$$



23. 
$$\begin{cases} x + 3y \leq 12 \\ x + y \leq 8 \\ x \geq 0 \\ y \geq 0 \end{cases}$$



24. The admission fee into a movie theatre is \$4.00 for children and \$8.50 for adults. On a certain day, 1800 people went to the theatre, and admissions fees collected totaled \$13,050. How many children and how many adults were admitted?
25. A man invests his savings in two accounts, one paying 6% interest per year and the other paying 7%. He has twice as much invested in the 7% account as in the 6% account, and his annual interest income is \$600. How much is invested in each account?
26. A piggy bank contains 50 coins, all of them nickels, dimes or quarters. The total value of the coins is \$5.60, and the value of the dimes is five times the value of the nickels. How many coins of each type are there?
27. Anne, Barry, and Cathy enter a bakery. Anne orders one juice, two muffins and two donuts, and pays \$6.25. Barry orders one muffin and three donuts, and pays \$3.75. Cathy orders one juice, three muffins, and four donuts, and pays \$9.25. Find the price of juice, muffins, and donuts at this bakery.