

Alg2 Chapter 3 Review

1. Graph the system of constraints. Name all of the vertices. Then find the maximum value of the given objective function.

$$\begin{cases} x + y \geq 6 \\ 2x + y \leq 10 \\ x \geq 0 \\ y \geq 0 \end{cases} \quad \text{Maximum for } 4x + y$$

Solve the system of inequalities by graphing.

2.
$$\begin{cases} y \leq -4x - 2 \\ y > 2x - 3 \end{cases}$$

3.
$$\begin{cases} x < -4 \\ y \leq -2 \end{cases}$$

4.
$$\begin{cases} y \geq -3x - 2 \\ y \leq \frac{1}{4}x - 2 \end{cases}$$

Use the elimination method to solve the system.

5.
$$\begin{cases} -2x + 2y = 4 \\ 5x - 2y = -4 \end{cases}$$

6.
$$\begin{cases} x - 3y = -6 \\ -4x + 12y = 24 \end{cases}$$

Solve the system by the method of substitution.

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

8.
$$\begin{cases} -3x + y = 7 \\ x - 4y = 16 \end{cases}$$

Without graphing, determine if one solution, infinite solutions or no solution. Justify your answer.

9.
$$\begin{cases} y = 2x + 10 \\ 6x - 3y = -30 \end{cases}$$

10.
$$\begin{cases} -4x + y = 7 \\ y = 4x + 5 \end{cases}$$

11.
$$\begin{cases} -4x - y = 8 \\ 3x - y = -6 \end{cases}$$

Solve the system by graphing.

12.
$$\begin{cases} y = -x - 9 \\ 3x - y = -11 \end{cases}$$

13.
$$\begin{cases} 4x + y - 1 = 0 \\ 12x + 3y = -4 \end{cases}$$

14. A baker wants to make bread and cake. A loaf of bread is made with 2 c flour and $\frac{1}{4}$ c sugar. Cake is made with 4 c flour and 1 c sugar. He will make a profit of \$1.50 on each loaf of bread and a profit of \$4 on each cake. You have 16 c flour and 3 c sugar. How many of each should you make to maximize the profit? What is the maximum profit?

15. A group of 44 people attended a ball game. There were three times as many children as adults in the group. Set up a system of equations that represents the numbers of adults and children who attended the game and solve the system to find the number of children who were in the group.

16. On a recent trip to The Apple Pan, Bob and Sally spent \$19.75 on 2 hamburgers and 3 drinks. On another trip, they spent \$24 on 3 hamburgers and 2 drinks. What was the cost of a hamburger and the cost of a drink?

17. The "Pay Upfront" car rental company charges an insurance and gas fee of \$33 and daily rental fee of \$8 per day. The "Drive Now Pay Later" car rental company charges an insurance and gas fee of \$18 and has a rental fee of \$11 per day. Find the number of days and the cost when the companies are equal.