

I. Solve the following systems of equations algebraically. (9 points each)

1.) $4x - 3y = 11$
 $11x + 6y = 16$

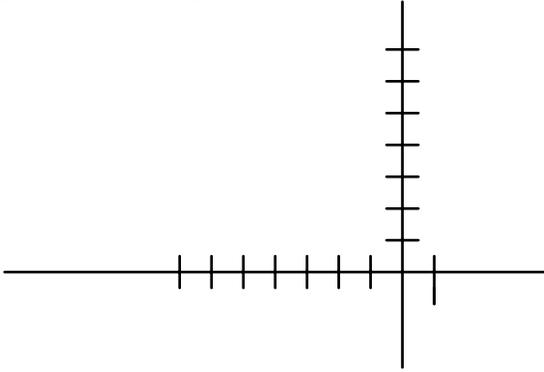
2.) $y = x - 5$
 $-2x + 2y = 3$

3.) $2x + 3y = 1/2$
 $3x + 2y = 1/4$

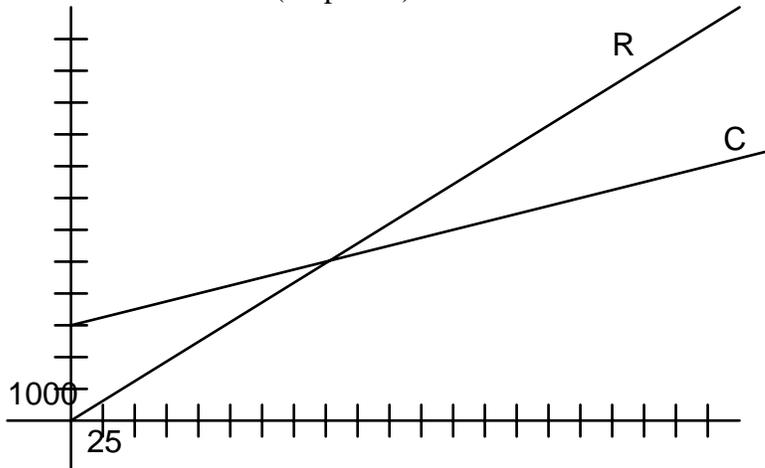
4.) $y = x + 3$
 $2x + 2y = 6 + 4x$

II. Solve the following system of equations graphically: (10 points)

$$y = 3x + 6; \quad y = -2x + 1$$



III. The following graph represents the cost C , of manufacturing blue jeans. The revenue R , for the number of jeans sold is also on the graph. The company's profit is the revenue minus the cost. (15 points)



- 1.) What is the startup cost of making the jeans? _____
- 2.) How many jeans can be made for \$5000? (Hint: Look at the cost line.) _____
- 3.) What is the revenue when 400 pairs of jeans are sold? _____
- 4.) How many pairs of jeans must be sold to break even? _____
- 5.) What is the profit when 300 pairs of jeans are sold? _____

IV. Solve the following application problems.

1.) Suppose you invest \$10,000, part in high risk stock which pays 12% interest and the rest in a savings account paying 5.5% interest. How much money should you invest in stocks and in the savings account to realize a 9% return (interest) on your investment? (9 points)

2.) Two companies A and B offer you a sales position. Both jobs are essentially the same, but A pays a straight commission and B pays \$75 a week plus 7% commission. For what amount of sales will company A pay the same as company B? (12 points)

(a.) Write a system of equations representing the pay (y) of each company in terms of the sales (x).

(b.) Solve the system of equations and answer the question in the problem.

(c.) Which company should you work for if you expect to sell \$1500 worth of merchandise per week?

3.) Traveling with the current, a cruise ship sailed between two islands, a distance of 90 miles, in 3 hours. The return trip against the current required 4 hours and 30 minutes. Find the rate of the cruise ship in calm water and the rate of the current. (9 points)

4.) The State College football stadium holds 80,000 people. A regular ticket costs \$15, while a student ticket costs \$7.50. If the total expenses for the game are \$375,000, what is the maximum number of student tickets which could be allotted to make a \$600,000 profit with a full house? (9 points)