

Math 170 Sections 3.1-3.3 Study Guide

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Note: On a quiz or exam, you are welcome to solve a system of equation using any mathematically correct method. Such methods include, but are not limited to, substitution, elimination, and matrix row-reduction. If you use your calculator to row-reduce (which I encourage), please make sure to include: the original matrix, the row-reduced matrix, and the corresponding solution. There are numerous problems in the textbook to practice solving systems of equations. I have selected a small fraction of them.

Problem 1) Solve the following system of equations:

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

Problem 2) Solve the following system of equations:

$$\begin{aligned}2x - 3y &= 1 \\ 6x - 9 &= 3\end{aligned}$$

Problem 3) Solve the following system of equations:

$$\begin{aligned}2x - y &= 3 \\ -6x + 3y &= 5\end{aligned}$$

Problem 4) Solve the following system of equations:

$$\begin{aligned}-x + 2y - z &= 0 \\ -x - y + 2z &= 0 \\ 2x - z &= 4\end{aligned}$$

Problem 5) Solve the following system of equations:

$$\begin{aligned}x + 2y - z + w &= 30 \\ 2x - z + 2w &= 30 \\ x + 3y + 3z - 4w &= 2 \\ 2x - 9y + w &= 4\end{aligned}$$

Problem 6) A bagel store orders cream cheese from three suppliers: Chseesy Cream Copr. (CCC), Super Smooth and Sons, and Bagel's Best Friend Co. (BBF). One month, the total order of cheese came to 100 tons. The costs were \$80, \$50, and \$65 per ton from the three suppliers respectively, with the total cost amounting to \$6,575. The store ordered the same amount from CCC and BBF. How many tons of cream cheese were ordered from the three stores?

Problem 7) Suppose you purchase three stocks. The prices and dividend yields are given below:

- **Company A.** Price- \$16 per share, with a dividend of 7%.
- **Company B.** Price- \$56 per share, with a dividend of 2%.
- **Company C.** Price- \$80 per share, with a dividend of 2%.

Suppose you invested \$8400 in the above stocks at the given prices, and that you expected to earn \$248 in dividends. If you purchased a total of 200 shares, how many shares of each stock did you purchase?