Exam 1 Practice Problems

Part 2 - Systems of Linear Equations

1. Find the value (or values) of k which makes the system of linear equations have no solution: $\begin{aligned} 3x - y &= 4 \\ -6x + ky &= 10 \end{aligned}$

2. The Aggie farm wants to plant maroon carrots and sweet onions. There are 100 acres available for planting this fall. The number of acres of carrots is to exceed twice the number of acres of onions by 10. If the farm wants to use all of the available acres, how many acres of onions should be planted?

3. A person has $10,100 to invest in two different stock. Stock ABC costs $32 per share and pays dividends of $1.20 per share. Stock XYZ costs $23 per share and pays dividends of $1.40 per share. If she wants to earn a total of $540 in dividends, how much should be invested in company ABC?

4. For what value or values of b is the given matrix in row-reduced echelon form? $\left[\begin{array}{cc|c} 0 & 1 & 0 \\ 0 & 0 & b \end{array}\right]$

5. Solve the following system of linear equations: $\begin{aligned} 2x + 3y + z &= 1 \\ x + y + z &= 3 \\ 3x + 4y + 2 &= 4 \end{aligned}$

6. Solve the following system of linear equations using the Gauss-Jordan method and augmented matrices:

$$\begin{aligned} -0.5x + 3y &= 15 \\ 2x + 5y &= 8 \end{aligned}$$

7. A pet store is buying three kinds of fish. They can purchase goldfish at $2.50 each, bluefish at $2.00 each or greenfish at $1.00 each. The store has $20.00 to purchase fish and the manager wants twice as many goldfish as greenfish. How many of each kind of fish can be bought?

8. Find the value (or values) for k such that the system has a parametric solution. $\left[\begin{array}{ccc|c} 1.2 & 0.8 & 1 & 12 \\ -3 & -2 & -2.5 & k \end{array}\right]$