

I. Word Problem

Set up two equations for the following problems and solve them by any method.

_____ 1. Juanita knew that she had 25 coins in her bank. The coins were all pennies and nickels. When she opened her bank, she counted a total of 65 cents. Determine the number of nickels that were in her bank.

_____ 2. The sum of the measures of two acute angles in a right triangle is 90° and the difference between them is 16° . Determine the measure of each angle.

II. Solve the following systems of equations using an augmented matrix.

_____ 3.
$$\begin{cases} 2x - y = 7 \\ 3x + 5y = 4 \end{cases}$$

_____ 4.
$$\begin{cases} 2x + 2y - 3z = -15 \\ 4x - y + 2z = 14 \\ x - 2y + 3z = 18 \end{cases}$$

_____ 5.
$$\begin{cases} 3x + 8y = 13 \\ 6x + 16y = 11 \end{cases}$$

III. Solve the following systems of equations using Cramer's Rule.

_____ 6.
$$\begin{cases} -10x + 6y = -22 \\ 5x - 3y = 11 \end{cases}$$

_____ 7.
$$\begin{cases} 2x + 5y = 11 \\ 4x - 3y = -17 \end{cases}$$

_____ 8.
$$\begin{cases} x + 3z = 0 \\ -2x + y + z = 8 \\ 2x - y + 4z = -3 \end{cases}$$

IV. Multiply the following matrices together.

_____ 9.
$$\begin{bmatrix} 4 & 2 \\ 0 & -1 \end{bmatrix} \begin{bmatrix} 2 & -3 & 1 \\ -2 & 1 & 0 \end{bmatrix}$$

_____ 10.
$$\begin{bmatrix} 1 \\ 3 \\ 5 \end{bmatrix} \begin{bmatrix} 2 & 4 & 6 \end{bmatrix}$$

V. Determine the inverse matrix of the given matrices.

_____ 11.
$$\begin{bmatrix} 7 & -4 \\ 5 & -3 \end{bmatrix}$$

_____ 12.
$$\begin{bmatrix} 3 & 1 & 0 \\ 4 & 2 & -1 \\ 0 & -2 & 1 \end{bmatrix}$$

VI. Given the following set of points, determine the linear regression line.

_____ 13. $\{ (1, 5), (2, 4), (6, 3), (11, 22) \}$

_____ 14. $\{ (-4, 7), (-2, 4), (0, 0), (1, -5) \}$