Academic Algebra II Test Chapter 4 Part 2 Name _____

I. Word Problem

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

_____ 1. Isabel knew that she had 30 coins in her bank. The coins were all pennies and nickels. When she opened her bank, she counted a total of $1.10. Determine the number of pennies 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 22˚. Determine the measure of each angle.

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

_____ 3. $\begin{cases} 2x - y = 7 \\ -4x + 2y = -14 \end{cases}$

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

_____ 5. $\begin{cases} x + 4y = 15 \\ 3x - y = -2 \end{cases}$

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

_____ 6. $\begin{cases} 3x - 2y = 15 \\ 4x - 3y = 19 \end{cases}$

_____ 7. $\begin{cases} 2x + 5y = 11 \\ 6x + 15y = -17 \end{cases}$

_____ 8. $\begin{cases} 2x + 2y - 3z = -15 \\ 4x - y + 2z = 14 \\ x - 2y + 3z = 18 \end{cases}$

IV. Multiply the following matrices together.

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

_____ 10. $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 5 \\ -1 & 0 & 2 \end{bmatrix}\begin{bmatrix} 0 & 2 & 3 \\ -5 & 4 & 7 \\ -2 & -7 & 8 \end{bmatrix}$

V. Determine the inverse matrix of the given matrices.

_____ 11. $\begin{bmatrix} 6 & 5 \\ -4 & -3 \end{bmatrix}$

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

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

_____ 13. { (1, 3), (2, 5), (6, 6), (10, 22) }

_____ 14. { (-4, 9), (-1, 4), (0, 0), (1, -6) }