Academic Algebra II Test Chapter 4 Name _____

I. Multiple Choice

_____ 1. Which is a solution of this system? $\begin{cases} 2x - y = 7 \\ 3x + 5y = 4 \end{cases}$

A. (4, 1) B. (-2, 2) C. (3, -1) D. No solution

_____ 2. The product of a 2x3 matrix and a 3x2 matrix is
A. a 3x3 matrix B. a 2x2 matrix C. a 2x3 matrix
D. Can not be done

_____ 3. The identity matrix for a 2x2 matrix is:

A. $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ B. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ C. $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ D. $\begin{bmatrix} 1 & 1 \\ 0 & 0 \end{bmatrix}$

_____ 4. Which of the following could be used to find x in this system? $\begin{cases} 3x + 8y = 13 \\ 5x - 3y = 11 \end{cases}$

A. $\dfrac{\begin{vmatrix} 3 & 8 \\ 5 & -3 \end{vmatrix}}{\begin{vmatrix} 13 & 8 \\ 11 & -3 \end{vmatrix}}$ B. $\dfrac{\begin{vmatrix} 13 & 8 \\ 11 & -3 \end{vmatrix}}{\begin{vmatrix} 3 & 8 \\ 5 & -3 \end{vmatrix}}$ C. $\dfrac{\begin{vmatrix} 3 & 13 \\ 5 & 11 \end{vmatrix}}{\begin{vmatrix} 3 & 8 \\ 5 & -3 \end{vmatrix}}$ D. $\dfrac{\begin{vmatrix} 3 & 8 \\ 5 & -3 \end{vmatrix}}{\begin{vmatrix} 3 & 13 \\ 5 & 11 \end{vmatrix}}$

DO ALL THE FOLLOWING ON YOUR OWN PAPER, SHOWING ALL WORK!

II. Evaluate each determinant (SHOW WORK):

5. $\begin{vmatrix} -3 & -7 \\ 4 & 9 \end{vmatrix}$

6. $\begin{vmatrix} 2 & 0 & 5 \\ -2 & -1 & 4 \\ 1 & 2 & 6 \end{vmatrix}$

III. Multiply the following matrices together, if possible:

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

8. $\begin{bmatrix} 2 & -1 & 4 \end{bmatrix}\begin{bmatrix} 2 \\ 3 \\ 1 \end{bmatrix}$

IV. Solve each system using substitution and/or elimination.

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

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

V. Solve the system using an augmented matrix and row reducing (or using the inverse of a matrix).

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

VI. Determine the inverse matrix of the following matrix:

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

VII. Solve the system using Cramer's Rule.

13. $\begin{cases} 2x - 3y = 10 \\ 3x - 4y = 16 \end{cases}$