Name: _____

Chapter 5 Study Guide

§5.1 System of Linear Equations

Solve the systems by elimination.

1) $x - 2y + 3z = 9$
$-x + 3y = -4$
$2x - 5y + 5z = 17$

Solution: _____

2) $2x + 3y = 11$
$x + 2y = 8$

Solution: _____

§ 5.1 Systems of Linear Systems

Use the substitution method or the elimination method to solve the following systems.

3) $3x + 2y = -9$
$2x = 5y - 6$

Solution: _____

4) $x - y + 5z = -6$
$3x + 3y - z = 10$
$x + 3y + 2z = 5$

Solution: _____

§5.3 Determinant Solution of Linear Systems

Find the determinant of matrix *B*.

5) $B = \begin{bmatrix} 3 & 4 \\ 5 & -2 \end{bmatrix} =$_____

Find the determinant of matrix *A by expanding through any row and using Cofactors*.

6) $A = \begin{bmatrix} 0 & 2 & 1 \\ 3 & -1 & 2 \\ 4 & 0 & 1 \end{bmatrix} =$ _____

§ 5.7 Properties of Matrices

Evaluate the following if possible. If not, write not possible, and explain why.

7) $\begin{bmatrix} 2 & 2 & 4 \\ -3 & 0 & -1 \end{bmatrix} + \begin{bmatrix} 1 & -4 & 3 \\ -1 & 3 & 2 \end{bmatrix} =$

8) $\begin{bmatrix} 6 & -2 & 0 \\ -9 & 4 & -3 \end{bmatrix} - \begin{bmatrix} 4 & 12 \\ 10 & -4 \end{bmatrix} =$

9) $-5\begin{bmatrix} 1 & -1 \\ -3 & 3 \\ -2 & 2 \end{bmatrix} =$

10) $\begin{bmatrix} 1 & 0 & 3 \\ 2 & -1 & -2 \end{bmatrix}\begin{bmatrix} -2 & 4 \\ 1 & 0 \\ -1 & 1 \end{bmatrix} =$

Calculate the inverse of the matrix algebraically using $I_2 = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ for problem 11 and $I_3 = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ for problem 12.

11) $B = \begin{bmatrix} -1 & 2 \\ 3 & -5 \end{bmatrix}$

12) $A = \begin{bmatrix} 1 & -1 & 0 \\ 1 & 0 & -1 \\ 6 & -2 & -3 \end{bmatrix}$

1. $(1, -1, 2)$
2. $(-2, 5)$
3. $(-3, 0)$
4. $(1, 2, -1)$
5. -26
6. 14
7. $\begin{bmatrix} 3 & -2 & 7 \\ -4 & 3 & 1 \end{bmatrix}$
8. Not possible because the matrices are not the same size.
9. $\begin{bmatrix} -5 & 5 \\ 15 & -15 \\ 10 & -10 \end{bmatrix}$
10. $\begin{bmatrix} -5 & 7 \\ -3 & 6 \end{bmatrix}$
11. $B^{-1} = \begin{bmatrix} 5 & 2 \\ 3 & 1 \end{bmatrix}$
12. $A^{-1} = \begin{bmatrix} -2 & -3 & 1 \\ -3 & -3 & 1 \\ -2 & -4 & 1 \end{bmatrix}$