

## HOMEWORK 8 - MATH 111

DUE DATE: Friday, November 15

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Read each problem very carefully before starting to solve it. Each question is worth 1 point. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. Solve the systems

$$\left\{ \begin{array}{rcl} 3x & + & 5y = 12 \\ -x & + & 2y = 7 \end{array} \right\}, \quad \left\{ \begin{array}{rcl} 2x & - & 3y = 1 \\ 8x & - & 12y = -4 \end{array} \right\},$$

by the substitution method.

2. Solve the system  $\left\{ \begin{array}{rcl} x & - & 2y + z = -6 \\ -x & + & 2y + z = 8 \\ 2x & - & 3y + 2z = -10 \end{array} \right\}$  by using allowable operations on the equations (Gauss elimination).

3. Solve the system  $\left\{ \begin{array}{rcl} x & + & y + z = -2 \\ -x & - & 2y + 3z = 1 \\ 2x & + & y - 2z = 3 \end{array} \right\}$  by using the Gauss-Jordan method (matrix row operations).

4. Solve the system  $\left\{ \begin{array}{rcl} x & + & 2y - z = 1 \\ -3x & - & y + z = 1 \\ 2x & + & 4y - 2z = 2 \end{array} \right\}$  by using the Gauss-Jordan method (matrix row operations).

5. Let  $A = \begin{bmatrix} 1 & -2 \\ 3 & -1 \end{bmatrix}$  and  $B = \begin{bmatrix} 3 & 6 \\ -8 & 5 \end{bmatrix}$ . Compute  $A + B$ ,  $A - B$  and  $3A - 2B$ .

6. Let  $A = \begin{bmatrix} 1 & 2 & 3 \\ -1 & 5 & 7 \end{bmatrix}$  and  $B = \begin{bmatrix} -10 & 2 & -7 \\ 3 & 2 & 0 \end{bmatrix}$ . Compute  $A - B$  and  $-2A + 5B$ .

7. Let  $A = \begin{bmatrix} -1 & 3 & -5 & 0 \\ 2 & 6 & -1 & 1 \end{bmatrix}$  and  $B = \begin{bmatrix} 1 & 0 & -2 \\ 3 & 2 & 0 \\ -1 & 7 & -3 \\ 1 & -5 & 9 \end{bmatrix}$ . Compute  $A \cdot B$  and  $B \cdot A$ .

8. Compute the inverses of the matrices  $A = \begin{bmatrix} -1 & 2 \\ 1 & -3 \end{bmatrix}$  and  $B = \begin{bmatrix} 2 & -1 \\ 6 & -3 \end{bmatrix}$ .