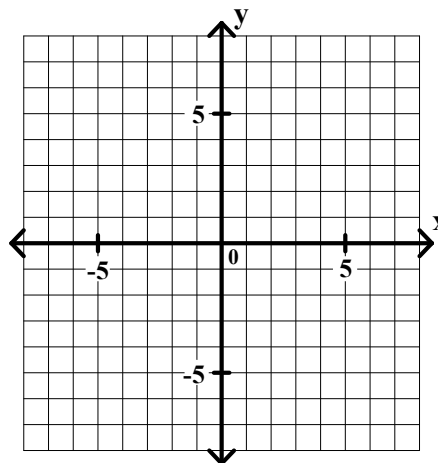


# Precalculus Review Unit 7 page 1 \_\_\_\_\_

1. Use the graphing method to solve the system below. Show your work.

$$x - 2y = 10$$

$$3x + 2y = 6$$



2. Solve the following system of equations using the **substitution method**. Show your work neatly organized.

$$2x - 3y = 12$$

$$y = 2x - 5$$

3. Solve the following system of equations using the **multiplication-addition method**. Show your work neatly organized.

$$3x - 4y = 1$$

$$2x - 5y = 2$$

## Precalculus Review Unit 7 page 2

Use Gauss-Jordan elimination to solve each of the following systems of equations. Show your work neatly organized.

3. 
$$\begin{aligned} 3x + 4y - 2z &= 3 \\ 2x + 3y + z &= 8 \\ 4x - 2y + 3z &= -14 \end{aligned}$$

5. 
$$\begin{aligned} 2a - b - c + 2d &= -2 \\ a + 2b + c + d &= 1 \\ 3a + 5b + c + 2d &= 0 \\ -2a + b + 2c - d &= 3 \end{aligned}$$

## Precalculus Review Unit 7 page 3

Use Cramer's rule to solve each of the following systems of equations. Show your work neatly organized.

6. 
$$\begin{aligned} 3x + 2y &= 7 \\ 5x + 3y &= -2 \end{aligned}$$

7. 
$$\begin{aligned} x + 3z &= -3 \\ 3x + y &= 2 \\ x + y + z &= 8 \end{aligned}$$

## Precalculus Review Unit 7 page 4

Given matrices A, B, C, and D below. Perform the indicated operations.

$$A = \begin{bmatrix} -4 & 5 \\ 3 & 2 \end{bmatrix} \quad B = \begin{bmatrix} -2 & 1 \\ -3 & -4 \end{bmatrix} \quad C = \begin{bmatrix} 5 & 0 & -4 \\ 3 & -3 & 2 \end{bmatrix} \quad D = \begin{bmatrix} -1 & -3 \\ 5 & 3 \\ 1 & 6 \end{bmatrix} \quad B = \begin{bmatrix} 4 & -2 \\ 5 & -1 \end{bmatrix}$$

8.  $2A + 3B =$

9.  $A \circ 2B =$

10.  $5A =$

11.  $-2D =$

12.  $AB =$

13.  $BA =$

14.  $CD =$

15.  $DC =$

## Precalculus Review Unit 7 page 5

Given matrix A, find  $A^{-1}$ . Show your work neatly organized.

16.  $A = \begin{bmatrix} 2 & 0 \\ 1 & 3 \end{bmatrix}$

17.  $A = \begin{bmatrix} 2 & 3 & 1 \\ 1 & 2 & -1 \\ -3 & -5 & 1 \end{bmatrix}$

## Precalculus Review Unit 7 page 6

Evaluate each of the following determinants. Show your work neatly organized.

$$18. \begin{vmatrix} 4 & 0 \\ 3 & 5 \end{vmatrix} = \underline{\hspace{2cm}}$$

$$19. \begin{vmatrix} -2 & 3 & 1 \\ 2 & 0 & -1 \\ -1 & 4 & 3 \end{vmatrix} = \underline{\hspace{2cm}}$$

$$20. \begin{vmatrix} 1 & 2 & -2 & 3 \\ -3 & 3 & 1 & -1 \\ 3 & -2 & -3 & 0 \\ 1 & 2 & 3 & 1 \end{vmatrix} = \underline{\hspace{2cm}}$$

## Precalculus Review Unit 7 page 7

Use a determinant to find the area of the triangle with the given vertices. Show your work neatly organized.

21. (3, -2) (0, 1) (5, 9)

22. (-1, -8) (-4, 6) (5, 0)

23. For this problem, you have to decode a message. You are given matrix A that was used to encode the matrix. You are also given matrix C, which represents the encoded message. Show your work neatly organized.

$$A = \begin{bmatrix} 2 & 3 & 1 \\ 1 & 2 & 4 \\ -1 & -1 & 2 \end{bmatrix} \quad C = \begin{bmatrix} 48 & 73 & 5 \\ 81 & 95 & 20 \\ 18 & 8 & 10 \end{bmatrix}$$

Hint: Let matrix M represent the message matrix. I found matrix C by multiplying A times M. In other words,  $C = (A)(M)$ . You, therefore, will find M by determining the inverse of A and multiplying it by C. In other words,  $M = (A^{-1})(C)$