$C = \begin{bmatrix} 12 & 6 \\ -8 & 24 \\ 2 & -5 \end{bmatrix}$ $D = \begin{bmatrix} -4 & 6 & -7 \\ 1 & -10 & 5 \end{bmatrix}$

$E = \begin{bmatrix} \frac{1}{2} & 5 & -8 \\ -1 & 9 & 6 \\ 7 & -1 & 4 \end{bmatrix}$ $F = \begin{bmatrix} -4 & 5 \\ 10 & -6 \\ 3 & 0 \end{bmatrix}$

Evaluate (if possible):

1) $3C + 2D^T$ 2) E^{-1}

3) F X D 4) $E \times C^T$

5) Find the determinant of E.

7. What are the dimensions of $\begin{bmatrix} 19 & 16 & 13 & -11 & 20 \\ -9 & -5 & -10 & -18 & 15 \\ 14 & 7 & 2 & 1 & 17 \end{bmatrix}$?

A. 5 x 3 B. 3 x 5

C. 4 x 5 D. 5 x 4

8. $X = \begin{bmatrix} 2 & 3 \\ 4 & 7 \end{bmatrix}$?

Find the inverse of matrix X.

9. Ex) $A = \begin{bmatrix} 3 & 1 \\ 5 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & -1 \\ -5 & 3 \end{bmatrix}$

Is B the inverse of matrix A?

(10) Find a, b, c, and d so that

$$\begin{bmatrix} 5 & -2 \\ 8 & 4 \end{bmatrix} + \begin{bmatrix} a & b \\ c & d \end{bmatrix} = \begin{bmatrix} 9 & 3 \\ -1 & 0 \end{bmatrix}$$

(11) Find w, x, y, and z so that

$$\begin{bmatrix} w & x \\ y & z \end{bmatrix} + \begin{bmatrix} -3 & 6 \\ 2 & 1 \end{bmatrix} = \begin{bmatrix} -4 & 7 \\ 2 & -5 \end{bmatrix}$$

(12) Find x and y so that

$$\begin{bmatrix} 1 & 2x \\ -3x & -1 \end{bmatrix} + \begin{bmatrix} 3 & -3y \\ 6y & 4 \end{bmatrix} = \begin{bmatrix} 4 & 4 \\ -3 & 3 \end{bmatrix}$$

(13) Find x and y so that

$$\begin{bmatrix} x & 5 \\ 8 & x \end{bmatrix} + \begin{bmatrix} 2y & 2 \\ 1 & -y \end{bmatrix} = \begin{bmatrix} 4 & 7 \\ 9 & 7 \end{bmatrix}$$

Determine whether the matrices in each pair are inverses.

1. $A = \begin{bmatrix} 2 & 1 \\ -1 & 0 \end{bmatrix}, B = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$

3. $F = \begin{bmatrix} -1 & 1 \\ 0 & -1 \end{bmatrix}, G = \begin{bmatrix} -1 & -1 \\ 0 & -1 \end{bmatrix}$

Find the inverse of each matrix, if it exists.

5. $\begin{bmatrix} 6 & -3 \\ -1 & 0 \end{bmatrix}$

7. $\begin{bmatrix} -3 & 0 \\ 5 & 2 \end{bmatrix}$

Solve using inverse matrices

9. $-2x + y = 9$
$x + y = 3$

Solve using Cramer's Rule

(A)

$4x + 3z - 2w = 2$
$3x + 1y + 2z - 1w = 4$
$1x - 6y - 2z + 2w = 0$
$2x + 2y - 1w = 1$

Calculate the area of the triangle with the following points:
(-8, -10), (-3, -11), (-5, -5)