PRACTICE QUESTIONS 5

Sections 16.1-16.5

1. Find AB and BA (if they are defined).

a) $A = \begin{bmatrix} 1 & -4 \\ 2 & -6 \end{bmatrix}$, $B = \begin{bmatrix} -2 & 2 \\ 3 & 5 \end{bmatrix}$

b) $A = \begin{bmatrix} 1 & -1 & 2 \\ 4 & -3 & 3 \end{bmatrix}$, $B = \begin{bmatrix} -2 & 5 \\ 1 & 6 \\ 5 & 2 \end{bmatrix}$

c) $A = \begin{bmatrix} 1 & -1 & 2 \\ 4 & -3 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 9 \\ 13 \\ -8 \end{bmatrix}$

2. Find the inverse of the following 2×2 matrices (if it exists) using the formula from class:

a) $A = \begin{bmatrix} 1 & -6 \\ 4 & -7 \end{bmatrix}$

b) $B = \begin{bmatrix} 12 & -3 \\ -8 & 2 \end{bmatrix}$

3. Find the inverse of the following matrix (if it exists):

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

4. Solve the systems below by finding A^{-1}:

a)

$$\begin{aligned} 8x - y &= 17 \\ -4x + y &= -5 \end{aligned}$$

b)

$$\begin{aligned} 4x \quad + 4z &= -4 \\ x + y + 2z &= -4 \\ x + y + \ z &= -2 \end{aligned}$$

5. Solve the following systems using Gauss-Jordan Elimination. If there are infinitely-many solutions, give two particular solutions.

a)

$$\begin{aligned} x + 3y - 2z &= 9 \\ 2x - y + 4z &= 6 \\ -3x + 2y - 3z &= -1 \end{aligned}$$

b)

$$\begin{aligned} 3x - 18y + 21z &= 12 \\ 2x + 7y - 6z &= 3 \end{aligned}$$

c)

$$\begin{aligned} x + 3y + 3z &= 12 \\ 2x + 20y + 10z &= 8 \\ x + 10y + 5z &= 0 \end{aligned}$$