Question 1

1. Perform addition on the following matrices.

i. $\begin{bmatrix}1 & 2\\3 & 4\end{bmatrix} + \begin{bmatrix}1 & 2\\3 & 4\end{bmatrix}$

ii. $\begin{bmatrix}1 & 2\\3 & 4\end{bmatrix} + \begin{bmatrix}1 & 2\\3 & 4\end{bmatrix}$

iii. $\begin{bmatrix}3 & 5 & 8 & 4\\2 & 7 & 8 & 9\end{bmatrix} + \begin{bmatrix}4 & 6 & 1 & 2\\0 & 2 & 3 & 8\end{bmatrix}$

iv. $\begin{bmatrix}23 & 12\\10 & 15\\3 & 6\\9 & 11\end{bmatrix} + \begin{bmatrix}2 & 4\\5 & 5\\2 & 3\\5 & 7\end{bmatrix}$

2. Perform Subtraction on the following matrices.

i. $\begin{bmatrix}2 & -4\\18 & 21\end{bmatrix} - \begin{bmatrix}3 & -8\\11 & -5\end{bmatrix}$

ii. $\begin{bmatrix}12 & 28\\-36 & 14\end{bmatrix} - \begin{bmatrix}13 & -2\\1 & 18\end{bmatrix}$

iii. $\begin{bmatrix}1 & -5 & 6\\8 & 11 & -22\\3 & 8 & 9\end{bmatrix} - \begin{bmatrix}12 & -7 & 4\\3 & 2 & -1\\5 & 16 & 11\end{bmatrix}$

iv. $\begin{bmatrix}13 & 23\\-11 & -5\end{bmatrix} - \begin{bmatrix}36 & 17\\21 & -42\end{bmatrix}$

3. Multiply A with B

i.

$$A = \begin{bmatrix} -5 & 5 & -4 \\ -2 & 2 & 2 \end{bmatrix}$$

$$B = \begin{bmatrix} -3 & -6 \\ 2 & 3 \\ 6 & 1 \end{bmatrix}$$

ii.

$$A = \begin{bmatrix} -5 & 0 & 6 \\ 5 & -1 & 1 \\ 2 & -1 & -6 \end{bmatrix}$$

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

iii.

$$A = \begin{bmatrix} 4x & xy \end{bmatrix}$$

$$B = \begin{bmatrix} x^2 & 0 & 6xy \\ -6x & 0 & -3 \end{bmatrix}$$

iv.

$$A = \begin{bmatrix} 12 & 8 & 4 \\ 3 & 17 & 14 \\ 9 & 8 & 10 \end{bmatrix}, \; B = \begin{bmatrix} 5 & 19 & 3 \\ 6 & 15 & 9 \\ 7 & 8 & 16 \end{bmatrix}$$

Question 3

1. Find the sum of A and B where A = $\begin{bmatrix} 2 & 3 \\ -5 & 7 \end{bmatrix}$ and B = $\begin{bmatrix} 4 & 6 \\ 2 & -11 \end{bmatrix}$

2. Find A + B when A = $\begin{bmatrix} 2 & 3 & 4 \\ 5 & 6 & 7 \\ 8 & 5 & 11 \end{bmatrix}$ and B = $\begin{bmatrix} 3 & -2 & -3 \\ 5 & 4 & 3 \\ 1 & 3 & 2 \end{bmatrix}$

3. If A = $\begin{bmatrix} -1 & 2 & -3 \\ -2 & 1 & 4 \end{bmatrix}$ and B = $\begin{bmatrix} 0 & -1 & 2 \\ 3 & 0 & 1 \end{bmatrix}$, then find the sum of A and B.

4. If $\begin{bmatrix} 2 & 3 \\ -5 & 4 \end{bmatrix}$ + $\begin{bmatrix} -2 & 1 \\ x & 3 \end{bmatrix}$ = $\begin{bmatrix} 0 & 4 \\ -3 & 9 \end{bmatrix}$, find the value of x.

5. Given A = $\begin{bmatrix} 1 & 4 \\ 2 & 3 \end{bmatrix}$ and B = $\begin{bmatrix} -4 & -1 \\ -3 & -2 \end{bmatrix}$, compute A + B.

6. If $\begin{bmatrix} 5 & -3 \\ 2 & 4 \end{bmatrix}$ + A = $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, find the matrix A.

7. Given M = $\begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix}$, find a matrix N such that M + N = $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$.

8. If A = $\begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 3 \\ 1 & 0 & 0 \end{bmatrix}$, B = $\begin{bmatrix} 0 & -1 & 0 \\ -2 & 0 & 3 \\ 0 & 1 & 2 \end{bmatrix}$ and C = $\begin{bmatrix} 2 & 3 & 1 \\ 0 & 0 & -3 \\ 1 & 1 & -1 \end{bmatrix}$, find A + B + C.