1) Given $A = \begin{bmatrix} 1 & 2 & 4 \\ 3 & 1 & 2 \\ 4 & 1 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 7 & 3 & 1 \\ 2 & 3 & 5 \\ 8 & 1 & 6 \end{bmatrix}$, $x = \begin{bmatrix} 1 \\ 4 \\ 2 \end{bmatrix}$, $y = \begin{bmatrix} 3 \\ 9 \\ 4 \end{bmatrix}$

find $A+B$, $B-A$, AB, BA , $x+y$, $x-y$ and Ax.

2) Given $A = \begin{bmatrix} 2 & 1 & -3 \\ -1 & 3 & 2 \\ 3 & 1 & -3 \end{bmatrix}$, find the inverse of A by Gauss – Jordan method using an

extended matrix like $\begin{bmatrix} a_{11} & a_{12} & a_{13} & 1 & 0 & 0 \\ a_{21} & a_{22} & a_{23} & 0 & 1 & 0 \\ a_{31} & a_{32} & a_{33} & 0 & 0 & 1 \end{bmatrix}$.

3) Find the solution of following systems by Gauss elimination method:
   a) $2x_1 + x_2 - 3x_3 = -1$
      $-x_1 + 3x_2 - 2x_3 = 12$
      $3x_1 + x_2 - 3x_3 = 0$
   b) $0.1x_1 - 0.6x_2 - x_3 = 0$
      $-2x_1 + 8x_2 - 0.3x_3 = 1$
      $x_1 + 6x_2 - 4x_3 = 2$

4) Find the solution of following systems by Gauss-Jordan method:
   a) $4x + y - z = 9$
      $3x + 2y - 6z = -2$
      $x - 5y + 3z = 1$
   b) $x - y = 0$
      $-x + 2y - z = 1$
      $-y + 1.1z = 0$

5) Find the determinant of $\begin{bmatrix} 8 & 1 & 3 & 2 \\ 2 & 9 & -1 & -2 \\ 1 & 3 & 2 & -1 \\ 1 & 0 & 6 & 4 \end{bmatrix}$

6) Find the inverse of $\begin{bmatrix} 1 & -1 & 0 & 0 \\ -1 & 2 & -1 & 0 \\ 0 & -1 & 2 & -1 \\ 0 & 0 & -1 & 2 \end{bmatrix}$

7) Find the L and U matrices for the following systems:
   a) $\begin{bmatrix} 2 & -1 & 0 \\ -1 & 2 & -1 \\ 0 & -1 & 2 \end{bmatrix}$
   b) $\begin{bmatrix} 2 & -1 & 0 \\ 3 & 4 & -1 \\ 0 & -1 & 2 \end{bmatrix}$

8) Find the unknowns in the following system:
   $0.12065x + 0.98775y = 2.01045$
   $0.12032x + 0.98755y = 2.00555$
   Repeat the solution by replacing the RHS of first equation with 2.01145.
   Discuss the results.

SN.