Assessment #2: Reading Week

Qs. 1.

1. Find the values of x and y when the product:

$$\begin{bmatrix} 18 & -2 & -7 \\ -17 & 8 & 2 \\ 10 & -5 & -6 \end{bmatrix} * \begin{bmatrix} -14 & -8 & -10 \\ 3 & 9 & 19 \\ x & -11 & 20 \end{bmatrix} = \begin{bmatrix} -132 & -85 & -358 \\ 226 & y & 362 \\ -47 & -59 & -315 \end{bmatrix}$$

2. Solve, if possible, the following linear equations using Gauss-Jordan elimination:

   1. $x + y + z = 2$
      $2 * x + 3 * y + z = 3$
      $x - y + 2 * z = -6$

   2. $3 * x + 2 * y + z = 3$
      $6 * x + 3 * y + 3 * z = 0$
      $6 * x + 2 * y + 4 * z = 6$

Qs. 2.

Use Cramer's Rule to solve the following linear Equations:

$$x * \begin{bmatrix} 1 \\ 1 \\ 2 \end{bmatrix} + y * \begin{bmatrix} -2 \\ 1 \\ -1 \end{bmatrix} + z * \begin{bmatrix} 3 \\ -5 \\ 4 \end{bmatrix} = \begin{bmatrix} 5 \\ -5 \\ 4 \end{bmatrix}$$

Qs. 3.

Using elementary row operations (as is used in Gauss-Jordan elimination) find the inverse of the matrix

$$M = \begin{bmatrix} 0 & 0 & 2 \\ 1 & 2 & 6 \\ 3 & 7 & 9 \end{bmatrix}$$

Qs. 4.

Calculate the Eigen values and Eigen Vectors of the following matrix:

$$M = \begin{bmatrix} 6 & 2 & 0 \\ 2 & 3 & 0 \\ 0 & 0 & -1 \end{bmatrix}$$