Homework 6

1.

0.1 ① $A \to 4 \times 5$

$E \to 4 \times 4$

$$\therefore E = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

$$\sim \begin{bmatrix} 1 & -1 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 3 & 0 & 1 \end{bmatrix}$$

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

③ $$E = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 3 & 0 & 1 \end{bmatrix}$$

④ $$E = \begin{bmatrix} 1 & -1 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

operation (4) followed by (3) would give the Matrix:

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

b) $E = \begin{bmatrix} 6 & 10 & -5 & -5 \\ 0 & 1 & 0 & 0 \\ 6 & 14 & -7 & -6 \\ 1 & 2 & -1 & -1 \end{bmatrix}$

$$\therefore \left[\begin{array}{cccc|c} 6 & 10 & -5 & -5 & 15 \\ 0 & 1 & 0 & 0 & -7 \\ 6 & 14 & -7 & -6 & 3. \\ 1 & 2 & -1 & -1 & -5 \end{array}\right] \left[\begin{array}{cccc|c} 1 & 0 & 0 & -5 & 15 \\ 0 & 1 & 0 & 0 & -7 \\ 0 & 2 & -1 & 6 & 3. \\ 1 & 0 & 1 & -12. & -5 \end{array}\right]$$

$$\sim \left[\begin{array}{cccc|c} 1 & 0 & 0. & 0 & 30 \\ 0 & 1 & 0 & 0 & -7. \\ 0 & 0 & 1 & 0 & 1 \\ 0 & 0 & 0 & 1 & 3. \end{array}\right]$$

$\therefore x_1 = 30$

$x_2 = -7.$

$x_3 = 1$

$x_4 = 3.$

2. I worked alone for this Homework. I worked on this Homework on Sunday..