1.- $2X + 3Y - Z = 1$

$3X - 2Y - 4Z = -3$

$5X - Y - Z = 4$

$$\begin{bmatrix} 2 & 3 & 1 & 1 \\ 3 & -2 & -4 & -3 \\ 5 & -1 & -1 & 4 \end{bmatrix}$$

$$\begin{bmatrix} 2 & 3 & 1 & 1 \\ 3 & -2 & -4 & -3 \\ 5 & -1 & -1 & 4 \end{bmatrix} \xrightarrow{\frac{1}{2}R1} \begin{bmatrix} 1 & 3/2 & 1/2 & 1/2 \\ 3 & -2 & -4 & -3 \\ 5 & -1 & -1 & 4 \end{bmatrix} \begin{matrix} -3R1+R2 \\ -5R1+R3 \end{matrix} \rightarrow \begin{bmatrix} 1 & 3/2 & 1/2 & 1/2 \\ 0 & -13/2 & -11/2 & -9/2 \\ 0 & -17/2 & -7/2 & 3/2 \end{bmatrix}$$

$$\begin{matrix} -2/13R2 \\ 2R3 \end{matrix} \rightarrow \begin{bmatrix} 1 & 3/2 & 1/2 & 1/2 \\ 0 & 1 & 11/2 & 9/13 \\ 0 & -17 & -7 & 3 \end{bmatrix} \xrightarrow{17R2+R3} \begin{bmatrix} 1 & 3/2 & 1/2 & 1/2 \\ 0 & 1 & 11/13 & 9/13 \\ 0 & 0 & 96/13 & 192/13 \end{bmatrix} \xrightarrow{13/96R3}$$

$$\begin{bmatrix} 1 & 3/2 & 1/2 & 1/2 \\ 0 & 1 & 11/3 & 9/13 \\ 0 & 0 & 1 & 2 \end{bmatrix} \begin{matrix} -11/13R3+R2 \\ -1/2R3+R1 \end{matrix} \rightarrow \begin{bmatrix} 1 & 3/2 & 0 & -1/2 \\ 0 & 1 & 0 & -1 \\ 0 & 0 & 1 & 2 \end{bmatrix} \xrightarrow{-3/2R2+R1} \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & -1 \\ 0 & 0 & 1 & 2 \end{bmatrix} \begin{matrix} x=1 \\ y=-1 \\ z=2 \end{matrix}$$

2.- A – B = -6

B + C = 3

C + 2D = 4

2A - 3D = 5

$$\begin{bmatrix} 1 & -1 & 0 & 0 & -6 \\ 0 & 1 & 1 & 0 & 3 \\ 0 & 0 & 1 & 2 & 4 \\ 2 & 0 & 0 & -3 & 5 \end{bmatrix} \xrightarrow{-2R1+R4} \begin{bmatrix} 1 & -1 & 0 & 0 & -6 \\ 0 & 1 & 1 & 0 & 3 \\ 0 & 0 & 1 & 2 & 4 \\ 0 & 2 & 0 & -3 & 17 \end{bmatrix} \xrightarrow{-2R2+R4}$$

$$\begin{bmatrix} 1 & -1 & 0 & 0 & -6 \\ 0 & 1 & 1 & 0 & 3 \\ 0 & 0 & 1 & 2 & 4 \\ 0 & 0 & -2 & -3 & 11 \end{bmatrix} \xrightarrow{2R3+R4} \begin{bmatrix} 1 & -1 & 0 & 0 & -6 \\ 0 & 1 & 1 & 0 & 3 \\ 0 & 0 & 1 & 2 & 4 \\ 0 & 0 & 0 & 1 & 19 \end{bmatrix} \xrightarrow{-2R4+R3}$$

$$\begin{bmatrix} 1 & -1 & 0 & 0 & -6 \\ 0 & 1 & 1 & 0 & 3 \\ 0 & 0 & 1 & 0 & -34 \\ 0 & 0 & 0 & 1 & 19 \end{bmatrix} \xrightarrow{-R3+R2} \begin{bmatrix} 1 & -1 & 0 & 0 & -6 \\ 0 & 1 & 0 & 0 & 37 \\ 0 & 0 & 1 & 0 & -34 \\ 0 & 0 & 0 & 1 & 19 \end{bmatrix} \xrightarrow{R2+R1}$$

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 31 \\ 0 & 1 & 0 & 0 & 37 \\ 0 & 0 & 1 & 0 & -34 \\ 0 & 0 & 0 & 1 & 19 \end{bmatrix}$$

a=31

b=37

c=34

d=19