

NAME: NDUBUISI DIVINE

DEPT: COMPUTER ENGINEERING

MATRIC: 171FUG021089

$$10m_1 - 2m_2 + m_3 = 9$$

$$-2m_1 + 10m_2 - 2m_3 = 12$$

$$-2m_1 - 5m_2 + 10m_3 = 18$$

$$M_1 = M_2 = M_3 = m = \begin{bmatrix} 0 & 0 & 0 \end{bmatrix}$$

Solution

$$\begin{bmatrix} 10 & -2 & 1 \\ -2 & 10 & 2 \\ -2 & 5 & 10 \end{bmatrix} \begin{bmatrix} M_1 \\ M_2 \\ M_3 \end{bmatrix} = \begin{bmatrix} 9 \\ 12 \\ 18 \end{bmatrix}$$

$$\begin{bmatrix} M_1 \\ M_2 \\ M_3 \end{bmatrix} = \begin{bmatrix} 0 & -\left(\frac{2}{10}\right) & -\frac{1}{10} \\ \left(\frac{2}{10}\right) & 0 & -\left(\frac{2}{10}\right) \\ -\left(\frac{2}{10}\right) & -\left(\frac{5}{10}\right) & 0 \end{bmatrix} \begin{bmatrix} M_1 \\ M_2 \\ M_3 \end{bmatrix} + \begin{bmatrix} \frac{9}{10} \\ \frac{12}{10} \\ \frac{18}{10} \end{bmatrix}$$

$$\begin{bmatrix} M_1 \\ M_2 \\ M_3 \end{bmatrix} = \begin{bmatrix} 0 & 0.2 & -0.1 \\ 0.2 & 0 & 0.2 \\ 0.2 & 0.5 & 0 \end{bmatrix} \begin{bmatrix} M_1 \\ M_2 \\ M_3 \end{bmatrix} + \begin{bmatrix} 0.9 \\ 1.2 \\ 1.8 \end{bmatrix}$$

$$\begin{bmatrix} M_1 \\ M_2 \\ M_3 \end{bmatrix} \Rightarrow \begin{bmatrix} 0 & 0.2 & -0.1 \\ 0.2 & 0 & 0.2 \\ 0.2 & 0.5 & 0 \end{bmatrix} \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix} + \begin{bmatrix} 0.9 \\ 1.2 \\ 1.8 \end{bmatrix} = \begin{bmatrix} 0.9 \\ 1.2 \\ 1.8 \end{bmatrix}$$

$$\begin{bmatrix} M_1 \\ M_2 \\ M_3 \end{bmatrix} \Rightarrow \begin{bmatrix} 0 & 0.2 & -0.1 \\ 0.2 & 0 & 0.2 \\ 0.2 & 0.5 & 0 \end{bmatrix} \begin{bmatrix} 0.9 \\ 1.2 \\ 1.8 \end{bmatrix} + \begin{bmatrix} 0.9 \\ 1.2 \\ 1.8 \end{bmatrix} = \begin{bmatrix} 0.96 \\ 1.76 \\ 2.68 \end{bmatrix}$$

$$\begin{bmatrix} M_1 \\ M_2 \\ M_3 \end{bmatrix} \Rightarrow \begin{bmatrix} 0 & 0.2 & -0.1 \\ 0.2 & 0 & 0.2 \\ 0.2 & 0.5 & 0 \end{bmatrix} \begin{bmatrix} 0.96 \\ 1.74 \\ 2.58 \end{bmatrix} + \begin{bmatrix} 0.9 \\ 1.2 \\ 1.8 \end{bmatrix} = \begin{bmatrix} 0.99 \\ 1.92 \\ 2.86 \end{bmatrix}$$