

3
C

$$Ly = Pb$$

$$\begin{bmatrix} 1 & 0 & 0 \\ -\frac{1}{5} & 1 & 0 \\ -\frac{1}{5} & \frac{2}{11} & 1 \end{bmatrix} \begin{bmatrix} y_1 \\ y_2 \\ y_3 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 1 & 0 \end{bmatrix} \begin{bmatrix} 0 \\ 5 \\ 5 \end{bmatrix}$$

$$= \begin{bmatrix} 0 \\ 5 \\ 1 \end{bmatrix}$$

$$y_1 = 0$$

$$y_2 = 5 + \frac{3}{5} \cdot 0 = 5 = y_2$$

$$y_3 = 1 - \frac{2}{11} \cdot 5 = \frac{1}{11} = y_3$$

$$y = \begin{bmatrix} 0 \\ 5 \\ \frac{1}{11} \end{bmatrix}$$

$$Ux = y$$

$$\begin{bmatrix} -5 & 2 & -\frac{1}{5} \\ \frac{1}{10} & -\frac{1}{5} & \frac{2}{11} \\ 0 & \frac{1}{10} & -\frac{1}{11} \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 0 \\ 5 \\ \frac{1}{11} \end{bmatrix}$$

$$x_3 = \frac{11}{20} \cdot \frac{1}{11} = \frac{1}{20} = x_3$$

$$x_2 = (5 - \frac{2}{5} \cdot \frac{1}{20}) \frac{5}{11} = 2.15 = x_2$$

$$x_1 = (\frac{1}{10} - 2 \cdot 2.15) (-\frac{1}{5}) = 0.85 = x_1$$

$$x = \begin{bmatrix} 0.85 \\ 2.15 \\ \frac{1}{20} \end{bmatrix}$$