3

b

$$Ly = Pb$$

$$Ux = y$$

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

$$= \begin{bmatrix} 2 \\ 1 \\ -2 \end{bmatrix}$$

$$y_1 = 2$$

$$y_2 = 1 + \frac{2}{5} 2 = 11/5 = y_2$$

$$y_3 = -2 + \frac{2}{5} \cdot \frac{2}{5} = -2 = y_3$$

$$y = \begin{bmatrix} 2 \\ 11/5 \\ -2 \end{bmatrix}$$

$$\begin{bmatrix} -5 & 2 & -1 \\ 0 & 11/5 & 27/5 \\ 0 & 0 & 30/11 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 2 \\ 11/5 \\ -2 \end{bmatrix}$$

$$x_3 = -\frac{11}{30} \cdot 2 = -\frac{11}{10} = x_3$$

$$x_2 = \left(\frac{11}{5} + \frac{27}{5} \frac{11}{10} \right) \frac{5}{11} = 3.7 = x_2$$

$$x_1 = \left(2 - 2 \cdot 3.7 - \frac{11}{10} \right) \cdot \left(-\frac{1}{5} \right)$$

$$= 1.3$$

$$x = \begin{bmatrix} 1.3 \\ 3.7 \\ -11/10 \end{bmatrix}$$