

$$LUx = b \Rightarrow \begin{cases} Lz = b \\ Ux = z \end{cases}$$

$$L = \begin{pmatrix} 1 & 0 & 0 \\ 3/2 & 1 & 0 \\ 1/2 & 11/13 & 1 \end{pmatrix}, U = \begin{pmatrix} 2 & -3 & -1 \\ 0 & 13/2 & -7/2 \\ 0 & 0 & 32/13 \end{pmatrix} \text{ i } b = \begin{pmatrix} 1 \\ -1 \\ 2 \end{pmatrix}$$

$$z = \begin{bmatrix} 1 \\ -2.5 \\ \frac{47}{13} \end{bmatrix}$$

$$1z_1 = 1$$

$$1.5z_1 + 1z_2 = -1 \Rightarrow z_2 = -2.5$$

$$0.5z_1 + \frac{11}{13}z_2 + 1z_3 = 2 \Rightarrow z_3 = \frac{3}{2} + \frac{55}{26} = \frac{94}{26} = \frac{47}{13}$$

$$\frac{32}{13}x_3 = \frac{47}{13} \Rightarrow x_3 = \frac{47}{13} \cdot \frac{13}{32} = \frac{47}{32}$$

$$\frac{13}{2}x_2 - \frac{7}{2}x_3 = -2.5 \Rightarrow x_2 = \frac{13 \cdot 169}{544} \cdot \frac{2}{13} = \frac{13}{32}$$

$$2x_1 - 3x_2 - x_3 = 1 \Rightarrow$$

$$\Rightarrow x_1 = \left( 1 + \frac{47}{32} + \frac{39}{32} \right) \cdot \frac{1}{2} = \frac{118}{64} = \frac{59}{32}$$

$$x = \begin{bmatrix} \frac{59}{32} \\ \frac{13}{32} \\ \frac{47}{32} \end{bmatrix}$$