

جواب کوئیز سوم

-1

$$A = \begin{bmatrix} 2 & 4 & -2 \\ 3 & 4 & -3 \\ -1 & -1 & 4 \end{bmatrix}, L = \begin{bmatrix} 2 & 0 & 0 \\ 3 & & \\ -1 & & \end{bmatrix}, U = \begin{bmatrix} 1 & 2 & -1 \\ 0 & 1 & \\ 0 & 0 & 1 \end{bmatrix}, l_{rr} = a_{rr} - \sum_{k=1}^r l_{rk} u_{kr} = -2$$

$$u_{rr} = \frac{a_{rr} - \sum_{k=1}^r l_{rk} u_{kr}}{l_{mm}} = 0, l_{rr} = a_{rr} - \sum_{k=1}^r l_{rk} u_{kr} = 1, l_{rr} = a_{rr} - \sum_{k=1}^r l_{rk} u_{kr} = 3 \rightarrow$$

$$L = \begin{bmatrix} 2 & 0 & 0 \\ 3 & -2 & 0 \\ -1 & 1 & 3 \end{bmatrix}, U = \begin{bmatrix} 1 & 2 & -1 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

$$y = a \sin(x) + b \rightarrow f_1 = \sin(x), f_r(x) = 1 - 2$$

$$F = \begin{bmatrix} \sqrt{2} & \sqrt{2} \\ 0.5 & 1 \\ 1 & 1 \\ 0.5 & 1 \end{bmatrix}, Y = \begin{bmatrix} \sqrt{2} \\ 1/5 \\ 4 \\ 2/5 \end{bmatrix}, C = \begin{bmatrix} a \\ b \end{bmatrix} \rightarrow F^T F = \begin{bmatrix} 0 & 0.5 & 1 & 0.5 \\ \sqrt{2} & 1 & 1 & 1 \end{bmatrix} \begin{bmatrix} 0 & \sqrt{2} \\ 0.5 & 1 \\ 1 & 1 \\ 0.5 & 1 \end{bmatrix} = \begin{bmatrix} 1/5 & 2 \\ 2 & 5 \end{bmatrix}$$

$$F^T F = \begin{bmatrix} 0 & 0.5 & 1 & 0.5 \\ \sqrt{2} & 1 & 1 & 1 \end{bmatrix} \begin{bmatrix} \sqrt{2} \\ 1/5 \\ 4 \\ 2/5 \end{bmatrix} = \begin{bmatrix} 6 \\ 8 \end{bmatrix} \rightarrow \begin{bmatrix} 1/5 & 2 \\ 2 & 5 \end{bmatrix} \begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} 6 \\ 8 \end{bmatrix} \rightarrow \begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} 4 \\ 0 \end{bmatrix}$$

$$\sum_{j=1}^r \delta_j^r = 2(0-0)^r + (2-1/5)^r + (4-4)^r + (2-2/5)^r = 0.5$$