

So

$$LU = A$$

$$\begin{bmatrix} 1 & 0 & 0 & 0 \\ -1 & 1 & 0 & 0 \\ -2 & 9 & 1 & 0 \\ -3 & 8 & -\frac{3}{5} & 1 \end{bmatrix} \begin{bmatrix} 3 & -7 & -2 & 2 \\ 0 & -2 & -1 & 2 \\ 0 & 0 & 5 & -19 \\ 0 & 0 & 0 & -\frac{49}{5} \end{bmatrix} = \begin{bmatrix} 3 & -7 & -2 & 2 \\ -3 & 5 & 1 & 0 \\ 6 & -4 & 0 & -5 \\ -9 & 5 & -5 & 12 \end{bmatrix}$$

hence

$$\underline{\underline{LU = A}}$$