$PA = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix} \begin{bmatrix} -5 & 2 & -1 \\ 3 & 1 & 6 \\ 1 & 0 & 7 \end{bmatrix} = \begin{bmatrix} -5 & 2 & -1 \\ 3 & 1 & 6 \\ 1 & 0 & 7 \end{bmatrix} = PA$

$LU = \begin{bmatrix} 1 & 0 & 0 \\ -\frac{3}{5} & 1 & 0 \\ -\frac{27}{55} & \frac{2}{11} & 1 \end{bmatrix} \begin{bmatrix} -5 & 2 & -1 \\ 0 & \frac{11}{5} & \frac{33}{5} \\ 0 & 0 & \left(\frac{3}{11}\cdot\frac{33}{5} + \frac{16}{5}\right) \end{bmatrix}$

$\begin{bmatrix} (-5) & (2) & (-1) \\ (3) & (1) & \left(-\frac{3}{5}\cdot(-1) + \frac{77}{5}\right) \\ \left(\frac{27}{55}(-5)\right)\left(-\frac{27}{55}\cdot 2 + \frac{2}{5}\right) & \left(-\frac{27}{55}\cdot(-1) + \frac{2}{11}\cdot\frac{33}{5}\right) & \left(-\frac{27}{55}\cdot(-1) + \frac{2}{11}\cdot\frac{33}{5} + \left(-\frac{5}{11}\cdot\frac{33}{5}\cdot\frac{2}{5} + \frac{16}{5}\right)\right) \end{bmatrix}$

$= \begin{bmatrix} -5 & 2 & -1 \\ 3 & 1 & 6 \\ \left(\frac{45}{55}\right)\left(-\frac{116}{55} + \frac{2}{5}\right) & 1 & 30/5 \end{bmatrix}$? $LU = PA$?

$\begin{bmatrix} 1 & 0 & 0 \\ -\frac{3}{5} & 1 & 0 \\ -\frac{27}{55} & \frac{2}{11} & 1 \end{bmatrix}$ → L

NOW, $PA = LU$?

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