

## 7.6. Factorizacion LU

$$A = \begin{pmatrix} 4 & -2 & -1 \\ 5 & 1 & -1 \\ 1 & 2 & -4 \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 \\ \text{factor 1} & 1 & 0 \\ \text{factor 2} & \text{factor 3} & 1 \end{pmatrix}$$

$$1) -5(I) + 4(II) = (II)$$

$$\begin{pmatrix} 4 & -2 & -1 \\ 0 & 14 & 1 \\ 1 & 2 & -4 \end{pmatrix}$$

factor 1 =

$$1) (III) = (I) - 4(II)$$

$$\begin{pmatrix} 4 & -2 & -1 \\ 0 & 14 & 1 \\ 0 & -10 & 13 \end{pmatrix}$$

factor 2

$$2) 5(I) + 2(III)$$

/

$$\begin{pmatrix} 0 \\ 0 \\ 1 \end{pmatrix} \cdot \begin{pmatrix} u_{11} & u_{12} & u_{13} \\ 0 & u_{22} & u_{23} \\ 0 & 0 & u_{33} \end{pmatrix}$$

$$= \frac{a_{21}}{a_{22}} = \frac{5}{4}$$

$$= \frac{a_{31}}{a_{11}} = \frac{1}{5}$$



$$\begin{pmatrix} 1 & -2 & -2 \\ 0 & 14 & 1 \\ 0 & 0 & 110 \end{pmatrix} \stackrel{\text{factor}}{=} U$$

$$L = \begin{pmatrix} 1 & 0 & 0 \\ 5/4 & 1 & 0 \\ 1/4 & -5/2 & 1 \end{pmatrix}$$

$$3 = \frac{a_{32}}{a_{22}} = -\frac{10}{14} = -\frac{5}{7}$$

$$\frac{s}{7}$$