

Exemplo: Dada a Matriz  $A = \begin{pmatrix} 4 & 2 & 2 \\ 2 & 2 & 0 \\ 2 & 0 & 2 \end{pmatrix}$

Usando o algoritmo de Gauss obtém-se a seguinte forma:

$$(A|I) \sim \dots \sim (H|L)$$

Agora, temos

$$(A|I) = \left( \begin{array}{ccc|ccc} 4 & 2 & 2 & 1 & 0 & 0 \\ 2 & 2 & 0 & 0 & 1 & 0 \\ 2 & 0 & 2 & 0 & 0 & 1 \end{array} \right) \begin{array}{l} l_2 \rightarrow -2l_2 \\ l_3 \rightarrow -2l_3 \end{array} \sim$$

$$\sim \left( \begin{array}{ccc|ccc} 4 & 2 & 2 & 1 & 0 & 0 \\ -2 & -4 & 0 & 0 & -2 & 0 \\ -4 & 0 & -4 & 0 & 0 & -2 \end{array} \right) \begin{array}{l} l_2 \rightarrow l_1 + l_2 \\ l_3 \rightarrow l_1 + l_3 \end{array} \sim$$

$$\left( \begin{array}{ccc|ccc} 4 & 2 & 2 & 1 & 0 & 0 \\ 0 & -2 & 2 & 1 & -2 & 0 \\ 0 & 2 & -2 & 1 & 0 & -2 \end{array} \right) \begin{array}{l} l_3 \rightarrow l_3 + l_2 \end{array} \sim$$

$$\left( \begin{array}{ccc|ccc} 4 & 2 & 2 & 1 & 0 & 0 \\ 0 & -2 & 2 & 1 & -2 & 0 \\ 0 & 0 & 0 & 2 & -2 & -2 \end{array} \right) \begin{array}{l} l_1 \rightarrow l_1 + l_2 \\ \\ \end{array} \sim$$

$$\left( \begin{array}{ccc|ccc} 4 & 0 & 4 & 2 & -2 & 0 \\ 0 & -2 & 2 & 1 & -2 & 0 \\ 0 & 0 & 0 & 2 & -2 & -2 \end{array} \right) \begin{array}{l} l_1 \rightarrow l_1/4 \\ l_2 \rightarrow -l_2/2 \\ \end{array} \sim$$

$$\left( \begin{array}{ccc|ccc} 1 & 0 & 1 & 1/2 & -1/2 & 0 \\ 0 & 1 & -1 & -1/2 & -1 & 0 \\ 0 & 0 & 0 & 2 & -2 & -2 \end{array} \right) \begin{array}{l} \\ \\ l_3 \rightarrow l_3/2 \end{array} \sim$$

$$\left( \begin{array}{ccc|ccc} 1 & 0 & 1 & 1/2 & -1/2 & 0 \\ 0 & 1 & -1 & -1/2 & -1 & 0 \\ 0 & 0 & 0 & 1 & -1 & -1 \end{array} \right) \sim (H|L)$$

$\underbrace{\hspace{1.5cm}}_H$ 
 $\underbrace{\hspace{1.5cm}}_L$