# Mètode de Gauss

$$\begin{pmatrix} A_{11} & A_{12} & A_{13} \\ A_{21} & A_{22} & A_{23} \\ A_{31} & A_{32} & A_{33} \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} = \begin{pmatrix} b_1 \\ b_2 \\ b_3 \end{pmatrix}$$

$$a^1 = \begin{pmatrix} A_{11} & A_{12} & A_{13} \\ A_{21} & A_{22} & A_{23} \\ A_{31} & A_{32} & A_{33} \end{pmatrix}, b^1 = \begin{pmatrix} b_1 \\ b_2 \\ b_3 \end{pmatrix}$$

$$n = 3$$
$$k = n - 1 = 2$$
$$k \in [1,2]$$
$$l = k + 1 \dots n$$

$k = 1, l \in [2,3], j \in [2,3]$

$$m_{21} = \frac{a_{21}^1}{a_{11}^1};\ m_{31} = \frac{a_{31}^1}{a_{11}^1}$$

$$a_{21}^2 = 0;\ a_{31}^2 = 0$$

$$a_{22}^2 = a_{22}^1 - m_{21}a_{12}^2$$
$$a_{23}^2 = a_{23}^1 - m_{21}a_{13}^2$$
$$a_{32}^2 = a_{32}^1 - m_{31}a_{12}^2$$
$$a_{33}^2 = a_{33}^1 - m_{31}a_{13}^2$$

$$b_2^2 = b_2^1 - m_{21}b_1^1$$
$$b_3^2 = b_3^1 - m_{31}b_1^1$$

$$a^2 = \begin{pmatrix} A_{11} & A_{12} & A_{13} \\ 0 & a_{22}^1 - m_{21}a_{12}^2 & a_{23}^1 - m_{21}a_{13}^2 \\ 0 & a_{32}^1 - m_{31}a_{12}^2 & a_{33}^1 - m_{31}a_{13}^2 \end{pmatrix}, b^2 = \begin{pmatrix} b_1 \\ b_2^1 - m_{21}b_1^1 \\ b_3^1 - m_{31}b_1^1 \end{pmatrix}, m = \begin{pmatrix} \frac{a_{21}^1}{a_{11}^1} \\ \frac{a_{31}^1}{a_{11}^1} \end{pmatrix}$$

$k = 2, l \in [3], j \in [3]$

$$m_{32} = \frac{a_{32}^2}{a_{22}^2}$$

$$a_{32}^3 = 0$$

$$a_{33}^3 = a_{33}^2 - m_{32}a_{23}^3$$

$$b_3^3 = b_3^2 - m_{32}b_2^2$$

$$a^3 = \begin{pmatrix} A_{11} & A_{12} & A_{13} \\ 0 & a_{22}^1 - m_{21}a_{12}^2 & a_{23}^1 - m_{21}a_{13}^2 \\ 0 & 0 & a_{33}^2 - m_{32}a_{23}^3 \end{pmatrix}, b^2 = \begin{pmatrix} b_1 \\ b_2^1 - m_{21}b_1^1 \\ b_3^2 - m_{32}b_2^2 \end{pmatrix}, m = \begin{pmatrix} \frac{a_{21}^1}{a_{11}^1} & \\ \frac{a_{31}^1}{a_{11}^1} & \frac{a_{32}^2}{a_{22}^2} \end{pmatrix}$$