

FICHE DE CALCULS - 1

Calcul de l'inverse d'une matrice

Résolution d'un système linéaire

M	M^{-1}	(S)	$S_{(S)}$
$\begin{pmatrix} -4 & -3 & -4 \\ -1 & -1 & 6 \\ 0 & 0 & -1 \\ 2 & -1 & 2 \\ -3 & 1 & -4 \\ -1 & 3 & 6 \\ 1 & -2 & 1 \\ -2 & 3 & 0 \\ -1 & 5 & -3 \\ -2 & 1 & -3 \\ -1 & 1 & 0 \\ 5 & -3 & 4 \end{pmatrix}$	$\begin{pmatrix} -1 & 3 & 22 \\ 1 & -4 & -28 \\ 0 & 0 & -1 \end{pmatrix}$	$\begin{cases} -x - y - 3z = 4 \\ x + 2y - 1z = 4 \\ -x - y - 3z = 4 \end{cases}$	$\left\{ \begin{pmatrix} -7z - 12 \\ 4z + 8 \\ z \end{pmatrix}; z \in \mathbb{R} \right\}$
$\frac{1}{2} \begin{pmatrix} -18 & -12 & -2 \\ -22 & -14 & -2 \\ 8 & 5 & 1 \end{pmatrix}$	$\frac{1}{2} \begin{pmatrix} -18 & -12 & -2 \\ -22 & -14 & -2 \\ 8 & 5 & 1 \end{pmatrix}$	$\begin{cases} 4y + 2z = 0 \\ -4x + 4y - 4z = 0 \\ 4y + 2z = -4 \end{cases}$	\emptyset
$\frac{1}{4} \begin{pmatrix} 9 & 1 & 3 \\ 6 & 2 & 2 \\ 7 & 3 & 1 \end{pmatrix}$	$\frac{1}{4} \begin{pmatrix} 9 & 1 & 3 \\ 6 & 2 & 2 \\ 7 & 3 & 1 \end{pmatrix}$	$\begin{cases} -3x - 2y - 2z = -4 \\ -3x - y - 3z = 1 \\ 3x + y + 2z = 4 \end{cases}$	$\left\{ \begin{pmatrix} \frac{14}{3} \\ 0 \\ -5 \end{pmatrix} \right\}$
$\frac{1}{2} \begin{pmatrix} 4 & 5 & 3 \\ 4 & 7 & 3 \\ -2 & -1 & -1 \end{pmatrix}$	$\frac{1}{2} \begin{pmatrix} 4 & 5 & 3 \\ 4 & 7 & 3 \\ -2 & -1 & -1 \end{pmatrix}$	$\begin{cases} -2x + y - 2z = 0 \\ 4x - 2y + 4z = -2 \\ x = 2 \end{cases}$	\emptyset
$\begin{pmatrix} 20 & 13 & 23 & -7 & -4 \\ -2 & -2 & -3 & 1 & 1 \\ 2 & 1 & 2 & -1 & 0 \\ -11 & -7 & -13 & 4 & 2 \\ -23 & -14 & -26 & 8 & 4 \end{pmatrix}$	$\begin{pmatrix} 20 & 13 & 23 & -7 & -4 \\ -2 & -2 & -3 & 1 & 1 \\ 2 & 1 & 2 & -1 & 0 \\ -11 & -7 & -13 & 4 & 2 \\ -23 & -14 & -26 & 8 & 4 \end{pmatrix}$	$\begin{cases} 3x - 1y + z = 0 \\ x - y = -1 \\ -x - 3y - 3z = 2 \\ -x - 3y + 3z = 0 \\ -x + y - 4z = -2 \\ -x - y = -1 \\ -y - z = -2 \\ -x + 4y + 2z = 0 \\ -3x + 4y - 3z = 1 \\ x - y - 2z = -1 \\ -3x + 2y + 3z = 4 \\ -3x - y - 3z = 1 \\ -3x + y - z = -1 \\ 3x + 3y + 3z = 2 \\ 4y + 2z = 1 \end{cases}$	$\left\{ \begin{pmatrix} 4 \\ 5 \\ -7 \end{pmatrix} \right\}$
$\frac{1}{9} \begin{pmatrix} 5 & 1 \\ 1 & 2 \end{pmatrix}$	$\frac{1}{9} \begin{pmatrix} 5 & 1 \\ 1 & 2 \end{pmatrix}$	$\begin{cases} -x - 3y + 3z = 0 \\ -x + y - 4z = -2 \\ -x - y = -1 \end{cases}$	$\left\{ \begin{pmatrix} \frac{3}{2} \\ -\frac{1}{2} \\ 0 \end{pmatrix} \right\}$
$\frac{1}{9} \begin{pmatrix} 9 & 0 \\ 9 & -1 \end{pmatrix}$	$\frac{1}{9} \begin{pmatrix} 9 & 0 \\ 9 & -1 \end{pmatrix}$	$\begin{cases} -y - z = -2 \\ -x + 4y + 2z = 0 \end{cases}$	$\left\{ \begin{pmatrix} 42 \\ 19 \end{pmatrix} \right\}$
$\frac{1}{2} \begin{pmatrix} -6 & -8 \\ 2 & 3 \end{pmatrix}$	$\frac{1}{2} \begin{pmatrix} -6 & -8 \\ 2 & 3 \end{pmatrix}$	$\begin{cases} -3x + 4y - 3z = 1 \\ x - y - 2z = -1 \\ -3x + 2y + 3z = 4 \\ -3x - y - 3z = 1 \\ -3x + y - z = -1 \\ 3x + 3y + 3z = 2 \\ 4y + 2z = 1 \end{cases}$	$\left\{ \begin{pmatrix} 0 \\ 5 \\ -2 \end{pmatrix} \right\}$
$\frac{1}{2} \begin{pmatrix} -15 & -13 & -10 & -14 \\ 2 & 0 & 0 & 0 \\ 8 & 8 & 6 & 8 \\ -8 & -6 & -4 & -6 \end{pmatrix}$	$\frac{1}{2} \begin{pmatrix} -15 & -13 & -10 & -14 \\ 2 & 0 & 0 & 0 \\ 8 & 8 & 6 & 8 \\ -8 & -6 & -4 & -6 \end{pmatrix}$	$\begin{cases} -3x + y - z = -1 \\ 3x + 3y + 3z = 2 \\ 4y + 2z = 1 \end{cases}$	$\left\{ \begin{pmatrix} y + \frac{1}{6} \\ y \\ -2y + \frac{1}{2} \end{pmatrix}; y \in \mathbb{R} \right\}$
$\frac{1}{3} \begin{pmatrix} 8 & 11 & 14 & 10 \\ 18 & 24 & 31 & 23 \\ -24 & -32 & -41 & -30 \\ 3 & 4 & 5 & 4 \end{pmatrix}$	$\frac{1}{3} \begin{pmatrix} 8 & 11 & 14 & 10 \\ 18 & 24 & 31 & 23 \\ -24 & -32 & -41 & -30 \\ 3 & 4 & 5 & 4 \end{pmatrix}$	$\begin{cases} -3x = -2 \\ -3x + 3y - 3z = -3 \end{cases}$	$\left\{ \begin{pmatrix} \frac{2}{3} \\ -\frac{1}{3} + z \\ z \end{pmatrix}; z \in \mathbb{R} \right\}$
$\frac{1}{3} \begin{pmatrix} 11 & 24 & -3 & -1 \\ -6 & -13 & 2 & 0 \\ -7 & -16 & 2 & 1 \\ 7 & 15 & -2 & 0 \end{pmatrix}$	$\frac{1}{3} \begin{pmatrix} 11 & 24 & -3 & -1 \\ -6 & -13 & 2 & 0 \\ -7 & -16 & 2 & 1 \\ 7 & 15 & -2 & 0 \end{pmatrix}$	$\{ 2x - 3y = 4 \}$	$\left\{ \begin{pmatrix} \frac{3}{2}y + 2 \\ y \\ z \end{pmatrix}; y, z \in \mathbb{R} \right\}$
$\frac{1}{3} \begin{pmatrix} 14 & -21 & -3 & -47 \\ -2 & 3 & 0 & 5 \\ -1 & 0 & 0 & 1 \\ -1 & 3 & 0 & 7 \end{pmatrix}$	$\frac{1}{3} \begin{pmatrix} 14 & -21 & -3 & -47 \\ -2 & 3 & 0 & 5 \\ -1 & 0 & 0 & 1 \\ -1 & 3 & 0 & 7 \end{pmatrix}$	$\begin{cases} -x + 4y + z - 4t = -3 \\ x - 2y - z - 4t = -1 \end{cases}$	$\left\{ \begin{pmatrix} 12t - 5 + z \\ 4t - 2 \\ z \\ t \end{pmatrix}; z, t \in \mathbb{R} \right\}$
$\frac{1}{2} \begin{pmatrix} -2 & -1 & 5 \\ 2 & 0 & -4 \\ -4 & -1 & 7 \end{pmatrix}$	$\frac{1}{2} \begin{pmatrix} -2 & -1 & 5 \\ 2 & 0 & -4 \\ -4 & -1 & 7 \end{pmatrix}$	$\begin{cases} x - 3z - t = 3 \\ -y - 2z - 2t = 4 \\ -2x - 4y - z - 3t = -4 \\ -3y - 4z = 1 \end{cases}$	$\left\{ \begin{pmatrix} -8t - 39 \\ 4t + 24 \\ -3t - 14 \\ t \end{pmatrix}; t \in \mathbb{R} \right\}$
$\frac{1}{3} \begin{pmatrix} 5 & -7 & 9 \\ -1 & 2 & -3 \\ -4 & 8 & -9 \end{pmatrix}$	$\frac{1}{3} \begin{pmatrix} 5 & -7 & 9 \\ -1 & 2 & -3 \\ -4 & 8 & -9 \end{pmatrix}$	$\begin{cases} 3x + 2y + 2z = 2 \\ -3x - 2y - 3z + t = 2 \\ 4x + 2y + 2z = 1 \\ 2x + 2y + 4z - 3t = 0 \end{cases}$	$\left\{ \begin{pmatrix} -1 \\ \frac{13}{2} - t \\ -4 + t \\ t \end{pmatrix}; t \in \mathbb{R} \right\}$
$\begin{pmatrix} 2 & 6 & -11 \\ 2 & 5 & -9 \\ 3 & 8 & -15 \end{pmatrix}$	$\begin{pmatrix} 2 & 6 & -11 \\ 2 & 5 & -9 \\ 3 & 8 & -15 \end{pmatrix}$	$\begin{cases} -2x + y = 0 \\ 3x - y = 1 \\ 2x + y = 4 \end{cases}$	$\left\{ \begin{pmatrix} 1 \\ 2 \end{pmatrix} \right\}$