$$\vec{u} = \begin{pmatrix} 1 \\ -1 \\ 2 \end{pmatrix} \qquad \vec{v} = \begin{pmatrix} 1 \\ 2 \\ -2 \end{pmatrix} \qquad \vec{w} = \begin{pmatrix} 3 \\ 1 \\ -1 \end{pmatrix}$$

$$\begin{vmatrix} 1 & 1 & 3 \\ -1 & 2 & 1 \\ 2 & -2 & -1 \end{vmatrix}$$ à calculer

Règle de Sarrus

$$\begin{matrix} 1 & 1 & 3 & 1 & 1 \\ -1 & 2 & 1 & -1 & 2 \\ 2 & -2 & -1 & 2 & -2 \end{matrix}$$

$$1 \cdot 2 \cdot (-1) + 1 \cdot 1 \cdot 2 + 3 \cdot (-1) \cdot (-2)$$
$$- 2 \cdot 2 \cdot 3 - (-2) \cdot 1 \cdot 1 - (-1)(-1) \cdot 1$$

$$= \cancel{-2} + \cancel{2} + 6 - 12 + 2 - 1$$

$$= -5$$

Vecteurs

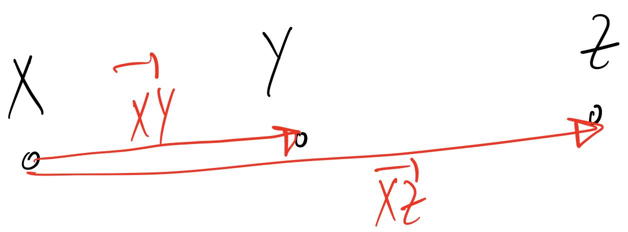
Points

$A(a_1 ; a_2)$ $\qquad$ $B(b_1 ; b_2)$

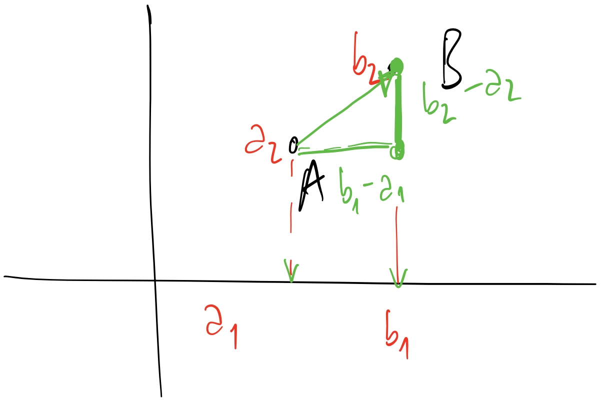
$$\vec{AB} = \begin{pmatrix} b_1 - a_1 \\ b_2 - a_2 \end{pmatrix}$$

$A(a_1 ; a_2 ; a_3)$ $\qquad$ $B(b_1 ; b_2 ; b_3)$

$$\vec{AB} = \begin{pmatrix} b_1 - a_1 \\ b_2 - a_2 \\ b_3 - a_3 \end{pmatrix}$$



X, Y, Z alignés $\Leftrightarrow$ $\vec{XY}$ et $\vec{XZ}$ colinéaires (il existe $k \in \mathbb{R}$ tq. $\vec{XY} = k \cdot \vec{XZ}$)



$$\overrightarrow{AB} = \begin{pmatrix} b_2 - a_2 \\ b_1 - a_1 \end{pmatrix}$$

$A(1;2;3)$

$$\overrightarrow{AB} = \begin{pmatrix} 4-1 \\ 5-2 \\ 6-3 \end{pmatrix} = \begin{pmatrix} 3 \\ 3 \\ 3 \end{pmatrix}$$

$B(4;5;6)$

$$\begin{pmatrix} 5 \\ 4 \\ -2 \end{pmatrix} + \begin{pmatrix} 1 \\ -2 \\ 3 \end{pmatrix} = \begin{pmatrix} 5+1 \\ 4-2 \\ -2+3 \end{pmatrix} = \begin{pmatrix} 6 \\ 2 \\ 1 \end{pmatrix}$$

$$5\begin{pmatrix} 1 \\ -2 \\ 3 \end{pmatrix} = \begin{pmatrix} 5 \\ -10 \\ 15 \end{pmatrix}$$