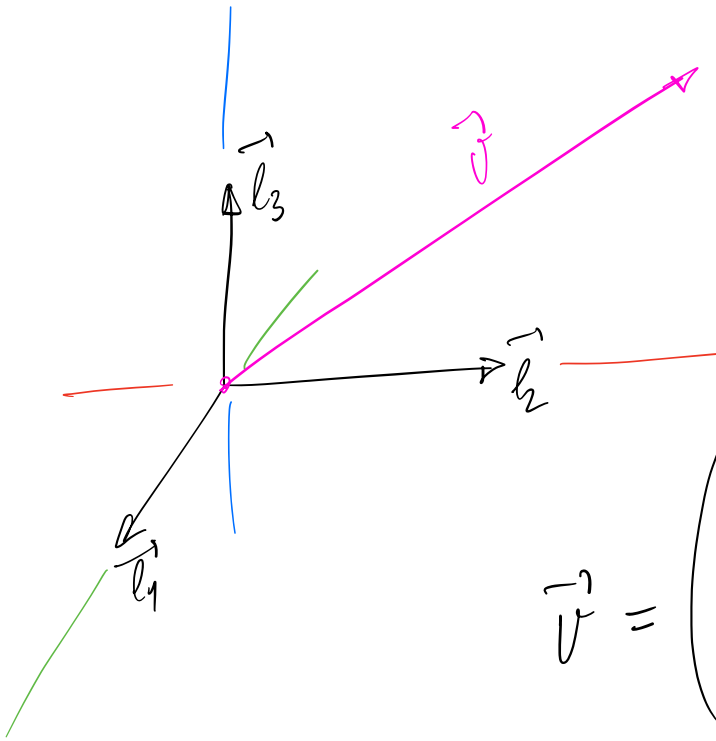
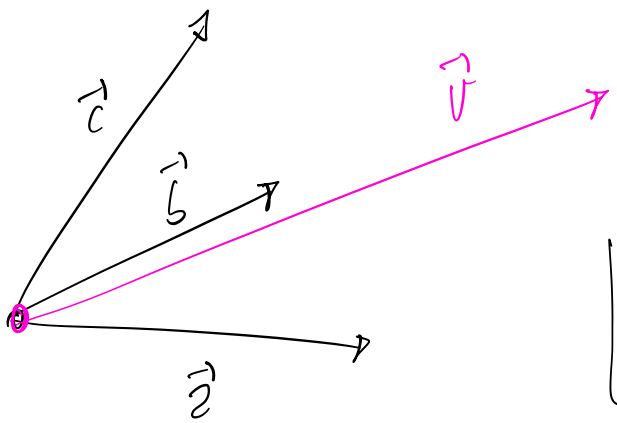


trois composantes

$$\vec{v} = \begin{pmatrix} v_1 \\ v_2 \\ v_3 \end{pmatrix} = v_1 \vec{\ell}_1 + v_2 \vec{\ell}_2 + v_3 \vec{\ell}_3$$



$$\boxed{\vec{v} = x\vec{a} + y\vec{b} + z\vec{c}}$$

$$\vec{a} = \begin{pmatrix} 1 \\ 0 \\ 1 \end{pmatrix} \quad \vec{b} = \begin{pmatrix} 1 \\ -2 \\ 1 \end{pmatrix} \quad \vec{c} = \begin{pmatrix} 2 \\ 1 \\ 1 \end{pmatrix} \quad \vec{v} = \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$$

$$\begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix} = \overset{7}{x} \cdot \begin{pmatrix} 1 \\ 0 \\ 1 \end{pmatrix} + \overset{-2}{y} \cdot \begin{pmatrix} 1 \\ -2 \\ 1 \end{pmatrix} + \overset{-2}{z} \cdot \begin{pmatrix} 2 \\ 1 \\ 1 \end{pmatrix}$$

$$x+y+2z=1$$

$$x\cdot 0+y(-2)+z=2$$

$$x\cdot 1+y\cdot 1+z\cdot 1=3$$

$$\begin{cases} x+y+2z=1 \\ -2y+z=2 \\ x+y+z=3 \end{cases} \quad \begin{matrix} \cdot 1 \\ \\ \cdot(-1) \end{matrix}$$

$$L_3 \leftarrow 1\cdot L_1 - 1\cdot L_3$$

$$\begin{cases} x+y+2z=1 \\ -2y+z=2 \\ z=-2 \end{cases}$$

$$\begin{array}{cccc} x & y & 2z & 1 \\ 0 & 0 & 2z-z & 1-3 \\ x-x & y-y & & \\ x & y & z & 3 \end{array}$$

$$\begin{cases} x+y-4=1 \\ -2y-2=2 \\ z=-2 \end{cases}$$

$$\begin{cases} x+y-4=1 \\ y=-2 \\ z=-2 \end{cases} \quad \begin{matrix} \cdot(-2) \\ \\ \\ \end{matrix}$$

$$\begin{cases} x=7 \\ y=-2 \\ z=-2 \end{cases}$$

$$\begin{cases} 3x-2y+z=1 \\ 2x+y-4z=2 \\ x-2y-3z=1 \end{cases} \quad \begin{matrix} \cdot 1 \\ \cdot 1 \\ \cdot(-3) \end{matrix} \quad \begin{matrix} \\ \cdot 1 \\ \cdot(-2) \end{matrix}$$

$$\begin{cases} 4y+10z=-2 \\ 5y+2z=0 \end{cases}$$

1.2.14

$$\vec{a}=\begin{pmatrix}3\\5\\2\end{pmatrix} \quad \vec{b}=\begin{pmatrix}4\\-8\\6\end{pmatrix} \quad \vec{c}=\begin{pmatrix}-16\\10\\7\end{pmatrix} \quad \vec{v}=\begin{pmatrix}0\\0\\52\end{pmatrix}$$

a)

$$x\cdot\begin{pmatrix}3\\5\\2\end{pmatrix}+y\begin{pmatrix}4\\-8\\6\end{pmatrix}+z\begin{pmatrix}-16\\10\\7\end{pmatrix}=\begin{pmatrix}0\\0\\52\end{pmatrix}$$

$$\begin{cases} 3x+4y-16z=0 \\ 5x-8y+10z=0 \\ 2x+6y+7z=52 \end{cases} \quad \begin{array}{l|l} \cdot 2 & \\ & \cdot 2 \\ \cdot(-3) & \cdot(-5) \end{array}$$

2 eq. 2 inc.

① $-10y-53z=-156$

② $-46y-15z=-260$

$$2x+6y+7z=52$$

$$6x+8y-32z=0$$

$$-6x-18y-21z=-156$$

$$-10y-53z=-156$$

$$10x-16y+20z=0$$

$$-10x-30y-35z=-260$$

260 = −46y − 15z

$$\begin{cases} -10y-53z=-156 \\ -46y-15z=-260 \end{cases} \quad \begin{array}{l|l} \cdot 23 & \\ \cdot(-5) & \end{array}$$

-1219 $\quad -3588$

$$\begin{cases} -230y-23\cdot 53z=-156\cdot 23 \\ +230y+75z=1300 \end{cases}$$

$$\begin{cases} x=4 \\ y=5 \\ z=2 \end{cases}$$

$$-1144z = -2288$$

$$z = 2 \quad \Rightarrow \quad -10y - 106 = -156$$

$$\Rightarrow \quad -10y = -50 \Rightarrow y = 5$$