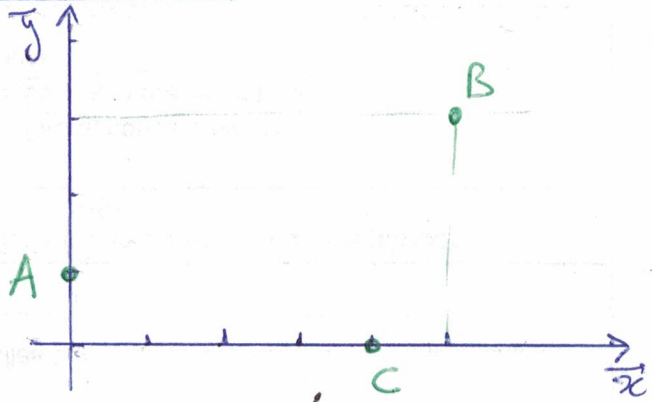


Liaisons / Calcul vectoriel

Ex 1 - Var cours



Ex 2:

$$1^{\circ}) \vec{AB} = \begin{pmatrix} x_B - x_A \\ y_B - y_A \\ z_B - z_A \end{pmatrix} = \begin{pmatrix} 5 \\ 2 \\ 0 \end{pmatrix}$$

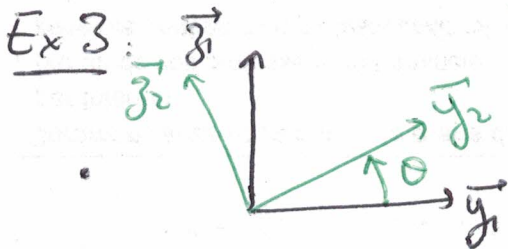
de même, $\vec{AC} = \begin{pmatrix} 4 \\ -1 \\ 0 \end{pmatrix}$

$$2^{\circ}) \|\vec{AB}\| = \sqrt{5^2 + 2^2 + 0^2} = \sqrt{29} \approx 5,4$$

$$\|\vec{AC}\| = \sqrt{4^2 + 1^2 + 0^2} = \sqrt{17} \approx 4,1$$

$$3^{\circ}) \vec{AB} \cdot \vec{AC} = \begin{pmatrix} 5 \\ 2 \\ 0 \end{pmatrix} \cdot \begin{pmatrix} 4 \\ -1 \\ 0 \end{pmatrix} = 20 - 2 + 0 = \underline{18}$$

$$4^{\circ}) \vec{AB} \wedge \vec{AC} = \begin{pmatrix} 5 \\ 2 \\ 0 \end{pmatrix} \wedge \begin{pmatrix} 4 \\ -1 \\ 0 \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \\ -13 \end{pmatrix}$$



$$\vec{z}_2 = \cos\theta \vec{z}_1 - \sin\theta \vec{y}_1$$

$$\vec{OB} = \vec{OA} + \vec{AB} = a\vec{y}_1 + b\vec{z}_2 = a\vec{y}_1 + b(\cos\theta \vec{z}_1 - \sin\theta \vec{y}_1) \\ = \underline{(a - b \sin\theta)\vec{y}_1 + b \cos\theta \vec{z}_1}$$

avec $\begin{cases} \vec{y}_1 = \cos\alpha \vec{y}_0 - \sin\alpha \vec{x}_0 \\ \vec{z}_1 = \vec{z}_0 \end{cases}$

on obtient dans R_0 :

$$\vec{OB} = -(a - b \sin\theta) \sin\alpha \vec{x}_0 + (a - b \sin\theta) \cos\alpha \vec{y}_0 + b \cos\theta \vec{z}_0$$