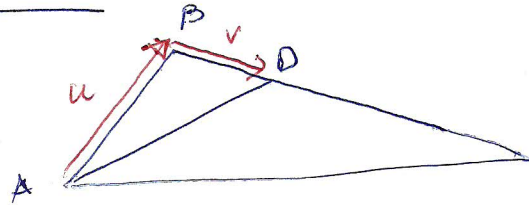


VECTORES

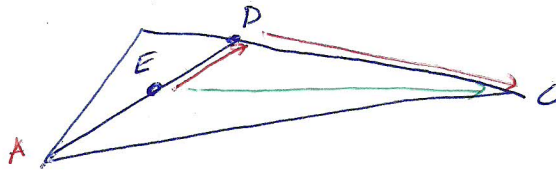
①

① a) $\vec{AE} = \frac{1}{2} \vec{AD}$



$$\vec{AD} = \vec{u} + \vec{v}$$

$$\vec{AE} = \frac{1}{2}(\vec{u} + \vec{v})$$



$$\vec{EC} = \vec{ED} + \vec{DC}$$

$$\vec{ED} = \vec{AE}$$

b)

además $\frac{BD}{DC} = \frac{1}{3} \rightarrow 3BD = DC$, luego:

$$\begin{aligned} \vec{EC} &= \vec{AE} + 3\vec{BD} = \\ &= \frac{1}{2}(\vec{u} + \vec{v}) + 3 \cdot \vec{v} = \frac{1}{2}\vec{u} + \frac{1}{2}\vec{v} + \frac{6}{2}\vec{v} = \frac{1}{2}\vec{u} + \frac{7}{2}\vec{v} = \frac{1}{2}(\vec{u} + 7\vec{v}) \end{aligned}$$

② a) L_1 perpendicular a $\begin{pmatrix} 3 \\ -2 \\ 1 \end{pmatrix}$ es perpendicular a $\begin{pmatrix} -6 \\ 4 \\ -2 \end{pmatrix}$; este multiplicado por (-2)

b)
$$\left. \begin{aligned} 1+3t &= 1+3p \\ 2-2t &= 2+2p \\ 3+3t &= 3+p \end{aligned} \right\} \rightarrow \begin{aligned} p &= t \\ 2-2p &= 2+2p; 0=4p \rightarrow \boxed{p=0} \\ & t=0 \end{aligned}$$

vector de p es $\begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$

c) $\begin{pmatrix} 3 \\ -2 \\ 1 \end{pmatrix} \cdot \begin{pmatrix} -1 \\ 2 \\ -a \end{pmatrix} = 0 \rightarrow -3-4-a=0 \rightarrow \boxed{a=-7}$

SERIE VECTORES - SOLUCIONES

③ a) $\vec{AB} = \vec{OB} - \vec{OA} = \begin{pmatrix} 1 \\ 1 \\ 5 \end{pmatrix} - \begin{pmatrix} 2 \\ 1 \\ 4 \end{pmatrix} = \begin{pmatrix} -1 \\ 0 \\ 1 \end{pmatrix}$

b) i) L_1 vector director = $\begin{pmatrix} -1 \\ 0 \\ 1 \end{pmatrix} \rightarrow \|L_1\| = \sqrt{1^2 + 0^2 + 1^2} = \sqrt{2}$

ii) $L_1 \Rightarrow \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 2 \\ 1 \\ 4 \end{pmatrix} + \lambda \begin{pmatrix} -1 \\ 0 \\ 1 \end{pmatrix}$

c) $\begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 4 \\ 7 \\ -4 \end{pmatrix} + s \begin{pmatrix} 0 \\ -1 \\ 1 \end{pmatrix} \Rightarrow \begin{matrix} x=4 \\ y=7-s \\ z=-4+s \end{matrix}$
 $\sqrt{1^2+1^2} = \sqrt{2}$

$$\begin{cases} x=4 \\ y=7-s \\ z=-4+s \end{cases}$$

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

$$\begin{cases} 4=2-\lambda \\ 7-s=1 \\ -4s=4+\lambda \end{cases} \rightarrow \begin{matrix} \lambda=-2 \\ s=6 \end{matrix}$$

Substituyendo en la 3ª ec.

~~$-4s=4+\lambda$~~ $-4+6=4-2$

$z=2$

& verifique \checkmark
intersección en
Punto

Substituyendo los valores de λ y s obtenidos

el punto $P \begin{pmatrix} 4 \\ 1 \\ 2 \end{pmatrix}$

ii) $\cos \theta = \frac{(-i+k) \cdot (-j+k)}{\sqrt{2} \cdot \sqrt{2}} = \frac{1}{2} \rightarrow \theta = 60^\circ$

d)

i) $\begin{pmatrix} 0 \\ -1 \\ 1 \end{pmatrix}$

