Propriétés du produit scalaire

$$\vec{a} = \begin{pmatrix} a_1 \\ a_2 \end{pmatrix} \qquad \vec{b} = \begin{pmatrix} b_1 \\ b_2 \end{pmatrix}$$

déf

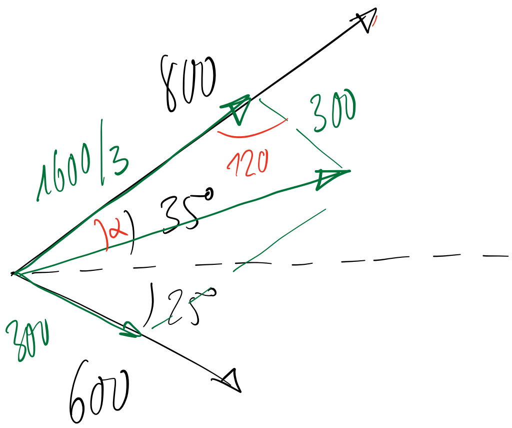
$$\boxed{\vec{a} \cdot \vec{b} = a_1 b_1 + a_2 b_2}$$

$$\boxed{\vec{a} \cdot \vec{b} = \vec{b} \cdot \vec{a}} \qquad p1$$

$$\boxed{(\vec{a} + \vec{b}) \cdot \vec{c} = \vec{a} \cdot \vec{c} + \vec{b} \cdot \vec{c}} \qquad p2$$

$$\boxed{k \cdot (\vec{a} \cdot \vec{b}) = (k \cdot \vec{a}) \cdot \vec{b}} \qquad p3$$

$$k \cdot (a_1 b_1 + a_2 b_2) = \begin{pmatrix} ka_1 \\ ka_2 \end{pmatrix} \cdot \begin{pmatrix} b_1 \\ b_2 \end{pmatrix} = (ka_1) b_1 + (ka_2) b_2$$



$$\frac{\sin\alpha}{300} = \frac{\sin 120}{\|\vec{a}\|}$$

$$\vec{T}_1 + \vec{T}_2 = m \cdot \vec{a}$$

$$\vec{a} = \frac{1}{m}\left(\vec{T}_1 + \vec{T}_2\right)$$

A, B, C, D

$\overrightarrow{AB}$

$\overrightarrow{CD}$

1.3.16

$\overrightarrow{AB} = k \cdot \overrightarrow{CD}$

$C = A + k\overrightarrow{AB}$

confondues

sinon

strict //

sinon

$A + k\overrightarrow{AB} = C + l \cdot \overrightarrow{CD}$ admet une solution unique

sécantes

gauches

$$k\begin{pmatrix}1\\-3\\2\end{pmatrix}+l\begin{pmatrix}0\\8\\-5\end{pmatrix}=m\begin{pmatrix}35\\14\\-10\end{pmatrix}+n\begin{pmatrix}-2\\-1\\0\end{pmatrix}$$

$$\begin{aligned} k &= 35m - 2n \\ -3k + 8l &= 14m - n \\ 2k - 5l &= -10m \end{aligned} \iff \begin{aligned} 2n - 35m + k &= 0 \\ n - 14m - 3k + 8l &= 0 \\ 10m + 2k - 5l &= 0 \end{aligned}$$

$$\begin{aligned} n - 14m - 3k + 8l &= 0 \\ 2n - 35m + k &= 0 \\ 10m + 2k - 5l &= 0 \end{aligned} \qquad L_2 \leftarrow L_2 - 2L_1$$

$$\begin{aligned} n - 14m - 3k + 8l &= 0 \\ -7m + 7k - 16l &= 0 \\ 10m + 2k - 5l &= 0 \end{aligned} \qquad \begin{aligned} n - 14m - 3k + 8l &= 0 \\ -7m + 7k - 16l &= 0 \\ 70m + 14k - 35l &= 0 \end{aligned}$$

$$\begin{aligned} n - 14m - 3k + 8l &= 0 \\ -7m + 7k - 16l &= 0 \\ 84k - 195l &= 0 \end{aligned} \qquad k = \frac{195}{84}l = \frac{65}{28}l$$

$$\frac{65}{28}\, l \begin{pmatrix} 1 \\ -3 \\ 2 \end{pmatrix} + l \begin{pmatrix} 0 \\ 8 \\ -5 \end{pmatrix} =$$

$$l \left[\begin{pmatrix} \frac{65}{28} \\ -\frac{195}{28} \\ \frac{130}{28} \end{pmatrix} + \begin{pmatrix} 0 \\ 8 \\ -5 \end{pmatrix} \right] = l \begin{pmatrix} \frac{65}{28} \\ \frac{224-195}{28} \\ \frac{130-140}{28} \end{pmatrix} =$$

$$l \begin{pmatrix} \frac{65}{28} \\ \frac{29}{28} \\ \frac{-10}{28} \end{pmatrix}$$