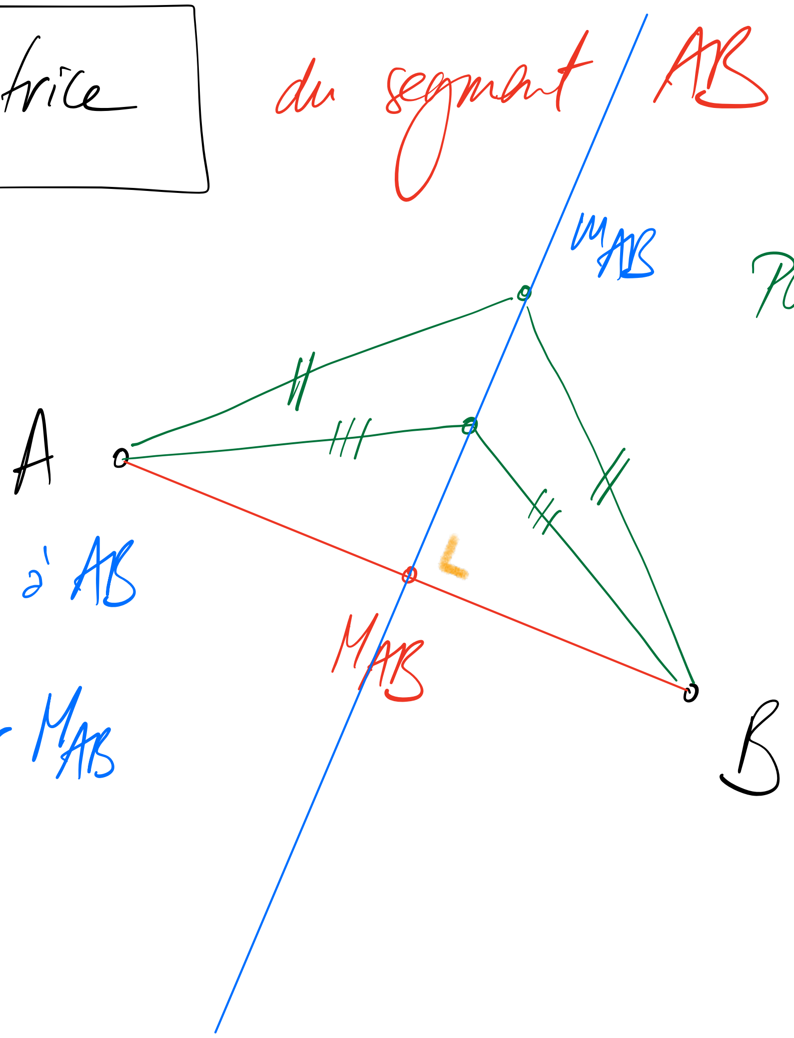
m_{AB} : $\boxed{\text{médiatrice}}$ du segment AB

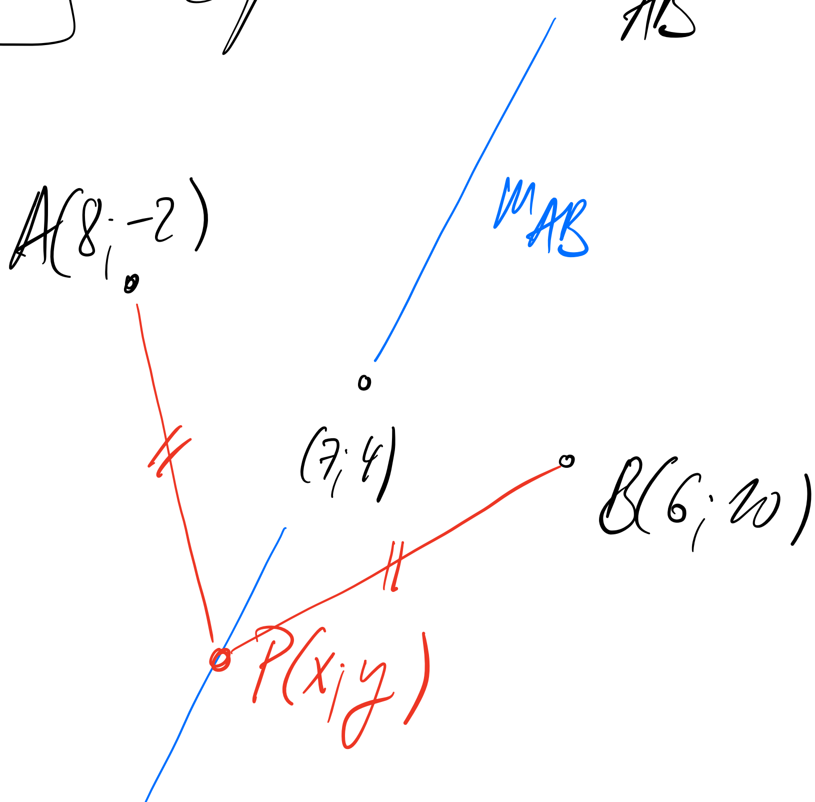


m_{AB} est $\perp$ à AB et passe par M_{AB}

$M_{AB} = « \frac{AB}{2} »$

POINT

$\boxed{1.4.6}$ Équation de m_{AB}



$M_{AB} = (7;4)$

$\overrightarrow{AP} = « P - A »$

$\overrightarrow{BP} = « P - B »$

<u>Condition:</u> $\|\overrightarrow{AP}\| = \|\overrightarrow{BP}\| \Leftrightarrow$ P est sur m_{AB}

$$\overrightarrow{AP} = \begin{pmatrix} x-8 \\ y-(-2) \end{pmatrix} \qquad \overrightarrow{BP} = \begin{pmatrix} x-6 \\ y-10 \end{pmatrix}$$

$$\|\overrightarrow{AP}\| = \sqrt{(x-8)^2 + (y+2)^2}$$

$$\|\overrightarrow{BP}\| = \sqrt{(x-6)^2 + (y-10)^2}$$

$$\|\overrightarrow{AP}\| = \|\overrightarrow{BP}\| \Leftrightarrow \sqrt{(x-8)^2 + (y+2)^2} = \sqrt{(x-6)^2 + (y-10)^2}$$

$(1;2)$ est sur m_{AB} ? <u>NON</u>

$$\sqrt{(1-8)^2 + (2+2)^2} \neq \sqrt{(1-6)^2 + (2-10)^2}$$

$$\sqrt{49+16} \neq \sqrt{25+64}$$

$$\sqrt{65} \neq \sqrt{89}$$

$$\sqrt{A} = \sqrt{B} \underset{\text{Thm}}{\Leftrightarrow} A = B \quad \text{pour } A, B \geq 0$$

$$\|\vec{AP}\| = \|\vec{BP}\| \Leftrightarrow (x-8)^2 + (y+2)^2 = (x-6)^2 + (y-10)^2$$

$$(A \pm B)^2 = A^2 \pm 2AB + B^2$$

$$\cancel{x^2} - 16x + 64 + \cancel{y^2} + 4y + 4 = \cancel{x^2} - 12x + 36 + \cancel{y^2} - 20y + 100$$

$$\cancel{-16x} + \cancel{4y} + 68 = \cancel{-12x} \cancel{-20y} + 136$$

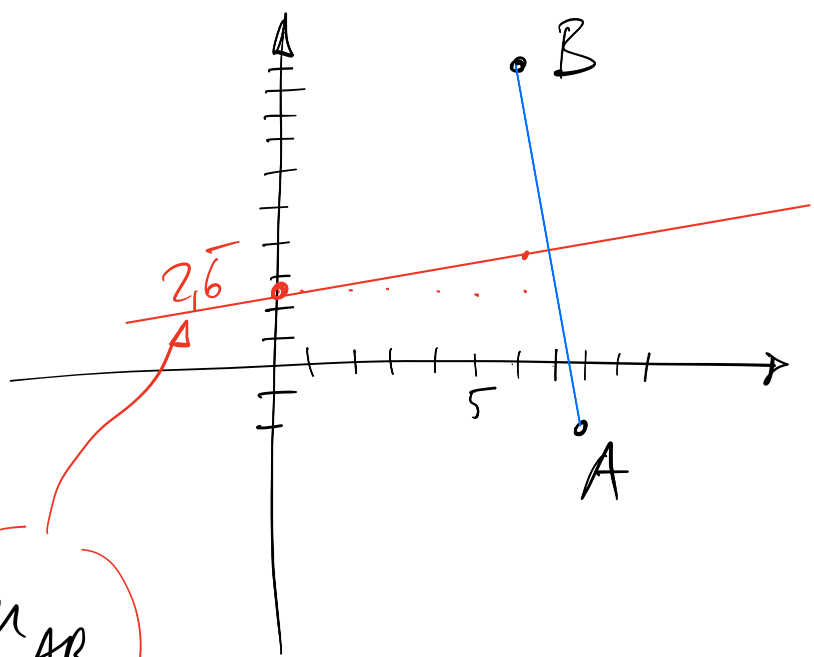
$$24y = 4x + 68$$

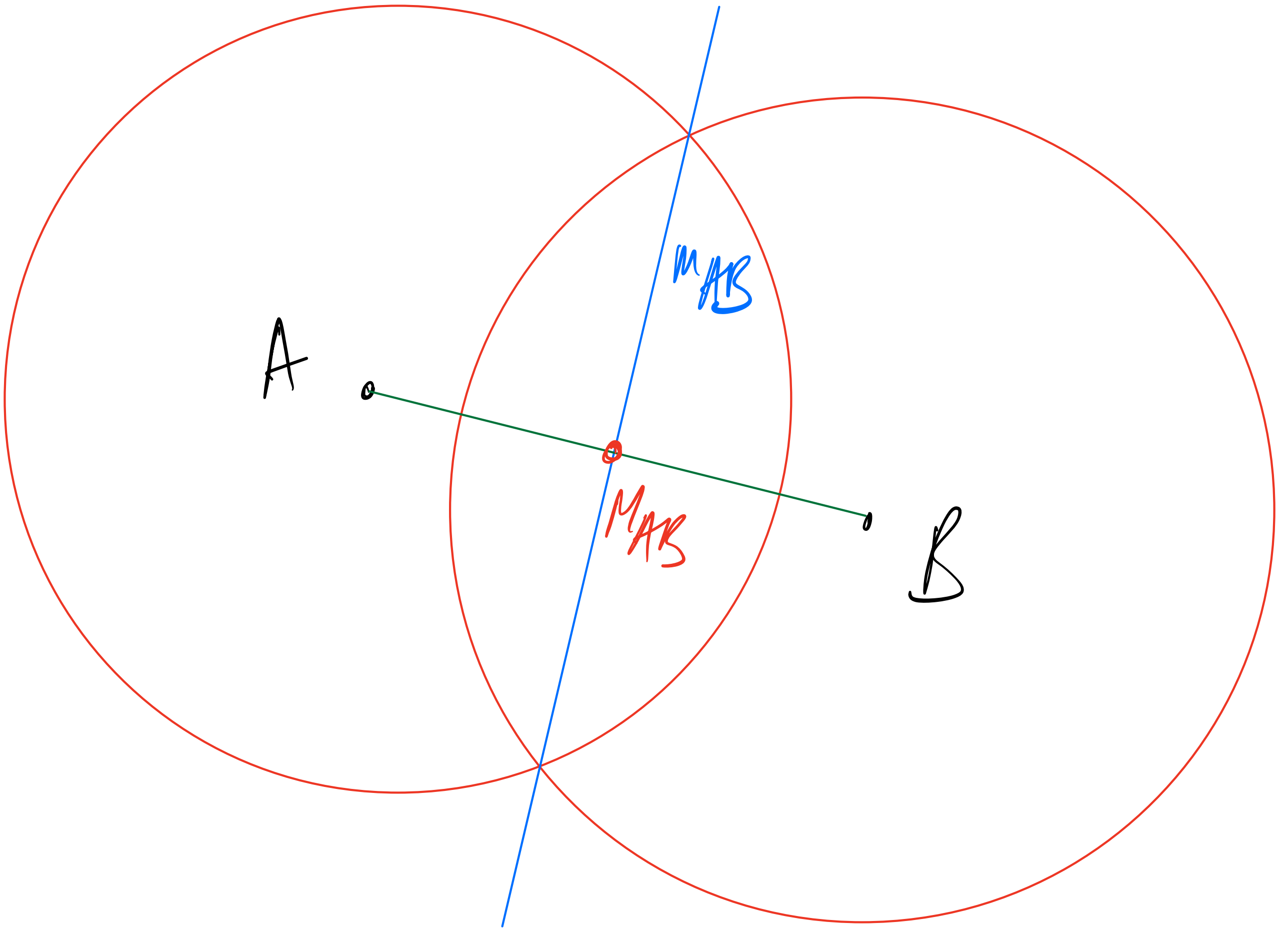
$$12y = 2x + 34$$

$$6y = x + 17$$

$$y = \frac{1}{6}x + \frac{17}{6}$$

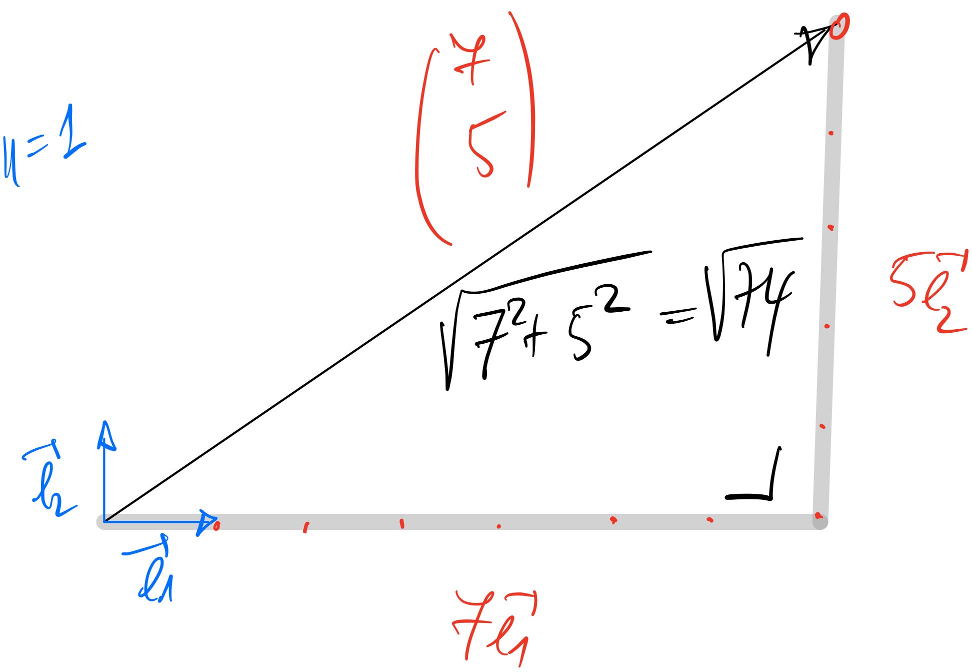
m_{AB}



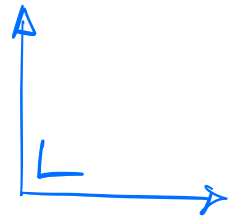


$\vec{e_1} \perp \vec{e_2}$

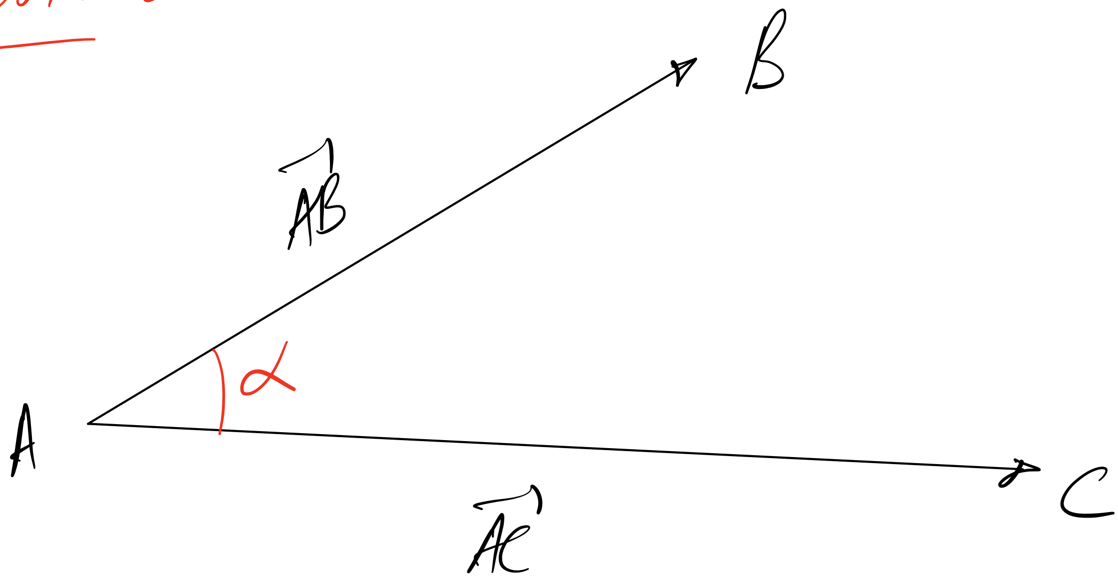
$\|\vec{e_1}\| = \|\vec{e_2}\| = 1$



PRODUIT SCALAIRE



BUT: CALCULER DES ANGLES



Soit $\vec{u} = \begin{pmatrix} u_1 \\ u_2 \end{pmatrix}$ $\vec{v} = \begin{pmatrix} v_1 \\ v_2 \end{pmatrix}$ deux vecteurs

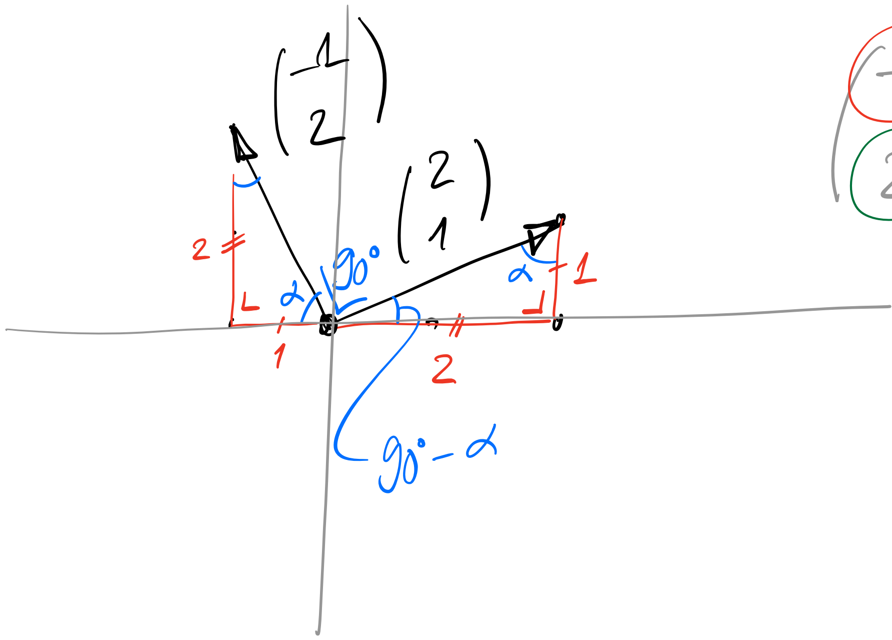
vecteur vecteur

$$\boxed{\vec{u}} \bullet \boxed{\vec{v}} = \boxed{u_1 \cdot v_1 + u_2 \cdot v_2}$$

nombre

produit scalaire

Théorème: $\vec{u} \bullet \vec{v} = 0 \Leftrightarrow \vec{u} \perp \vec{v}$



$$\begin{pmatrix} -1 \\ 2 \end{pmatrix} \circ \begin{pmatrix} 2 \\ 1 \end{pmatrix} =$$

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

$$-2+2 = 0$$

$\boxed{1.4.2}$

$$\overrightarrow{AB} = \begin{pmatrix} 3 \\ 3 \\ 3 \end{pmatrix}$$

$B(4;5;6)$

$A(1;2;3)$

$C(-3;-2;-1)$

$$\|\overrightarrow{AB}\| = \sqrt{3^2+3^2+3^2} = \sqrt{27} \simeq 5,2$$

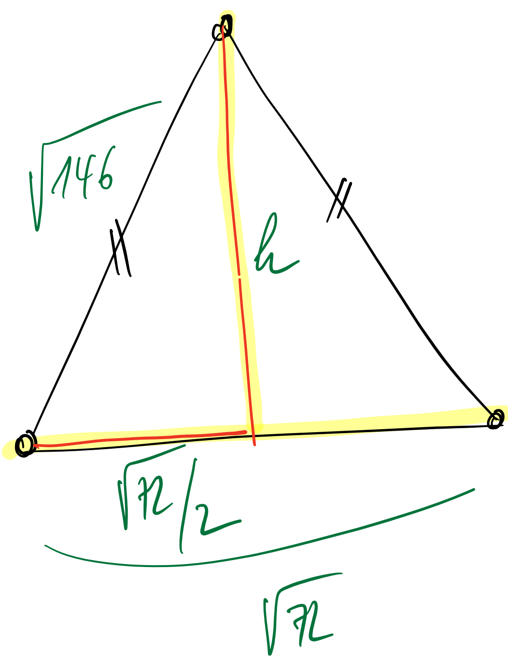
$\|\overrightarrow{AC}\|$

$\|\overrightarrow{BC}\|$

5,2

TOTAL

$\boxed{1.4.3}$



$$A = \frac{\sqrt{72}}{2} \cdot \sqrt{128}$$

$$= \frac{96}{2} = 48$$

$$h^2 = \sqrt{146}^2 - \left(\frac{\sqrt{72}}{2}\right)^2$$

$$= 146 - \frac{72}{4}$$

$$= 146 - 18$$

$$= 128$$

$$h = \sqrt{128}$$