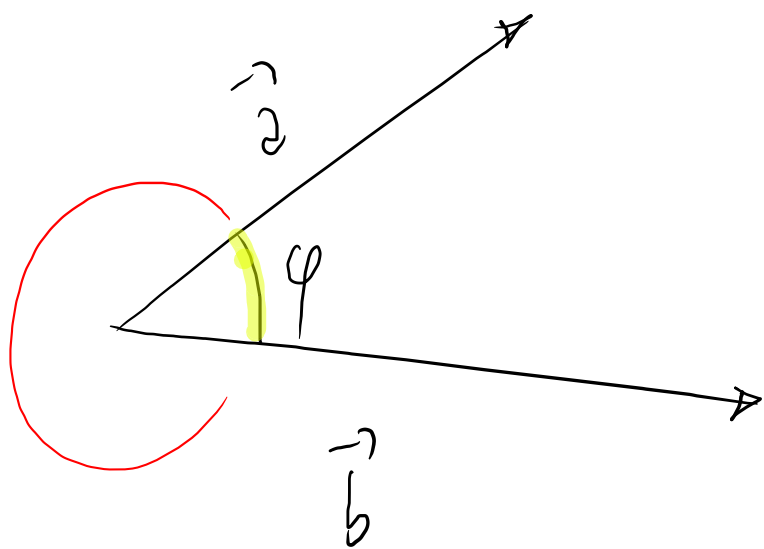
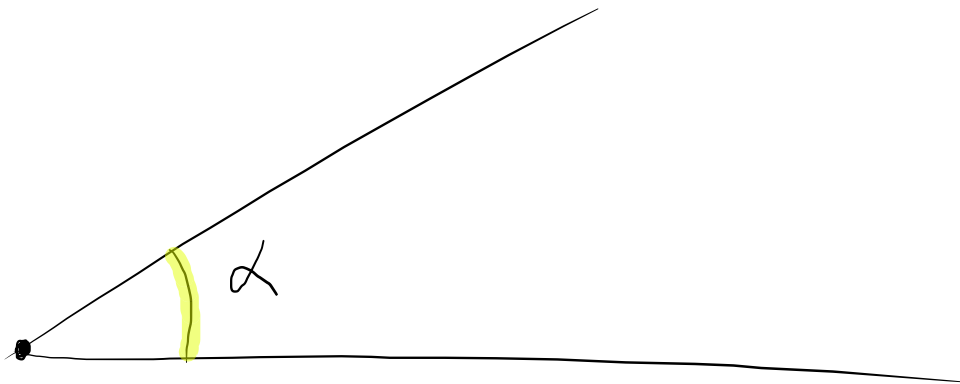


$$|-5| = 5$$

$$|5| = 5$$



Valeur
absolue



Angle

produit scalaire

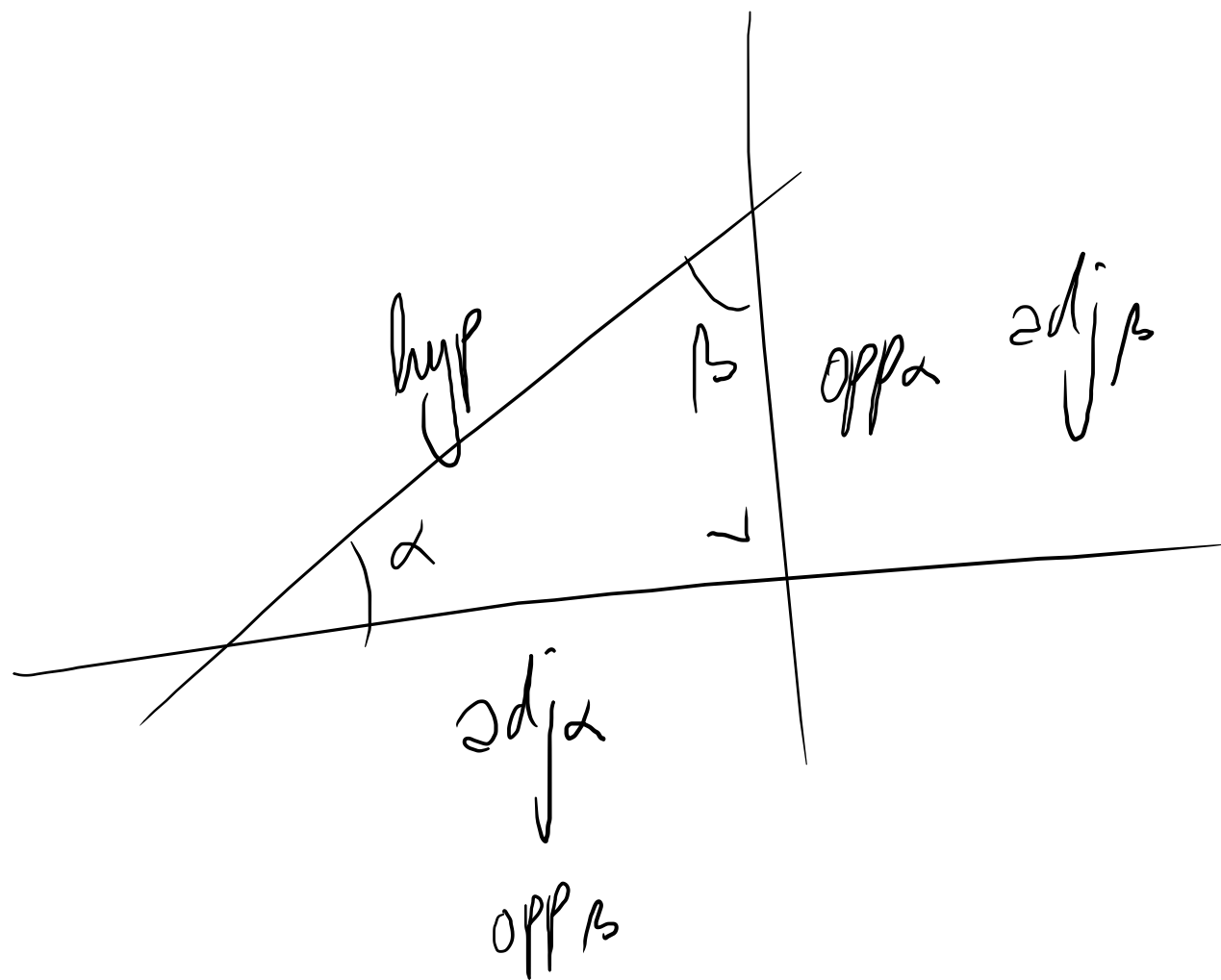
$$1.4.28 / 1.4.29$$

valeur absolue

$$\cos \varphi = \frac{|\vec{a} \cdot \vec{b}|}{\|\vec{a}\| \cdot \|\vec{b}\|}$$

$\varphi \in [0^\circ; 180^\circ]$

norme



$$\cos \alpha = \frac{\text{adj } \alpha}{\text{hyp}} < 1$$

$$\sin \alpha = \frac{\text{opp } \alpha}{\text{hyp}}$$

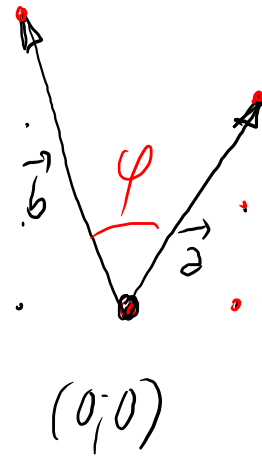
$$\tan \alpha = \frac{\text{opp } \alpha}{\text{adj } \alpha} = \frac{\sin \alpha}{\cos \alpha}$$

$$\cos \alpha = 0,38$$

$$\alpha = \cos^{-1}(0,38)$$

Example:

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



$$\cos \varphi = \frac{|\vec{a} \cdot \vec{b}|}{\|\vec{a}\| \cdot \|\vec{b}\|}$$

$$\vec{a} \cdot \vec{b} = 1 \cdot (-1) + 2 \cdot 3 = -1 + 6 = 5$$

$$\|\vec{a}\| = \sqrt{1^2 + 2^2} = \sqrt{5}$$

$$\|\vec{b}\| = \sqrt{(-1)^2 + 3^2} = \sqrt{10}$$

$$\begin{aligned} \text{abs}(5) &= |5| = 5 \\ &= \frac{5}{\sqrt{5} \sqrt{10}} = \frac{5}{\sqrt{50}} \\ &\approx 0,707 \end{aligned}$$

$$\Rightarrow \varphi \approx \cos^{-1}(0,707) = 45^\circ$$

$$\begin{aligned} |5| &= 5 \\ |-8| &= 8 \end{aligned}$$

