

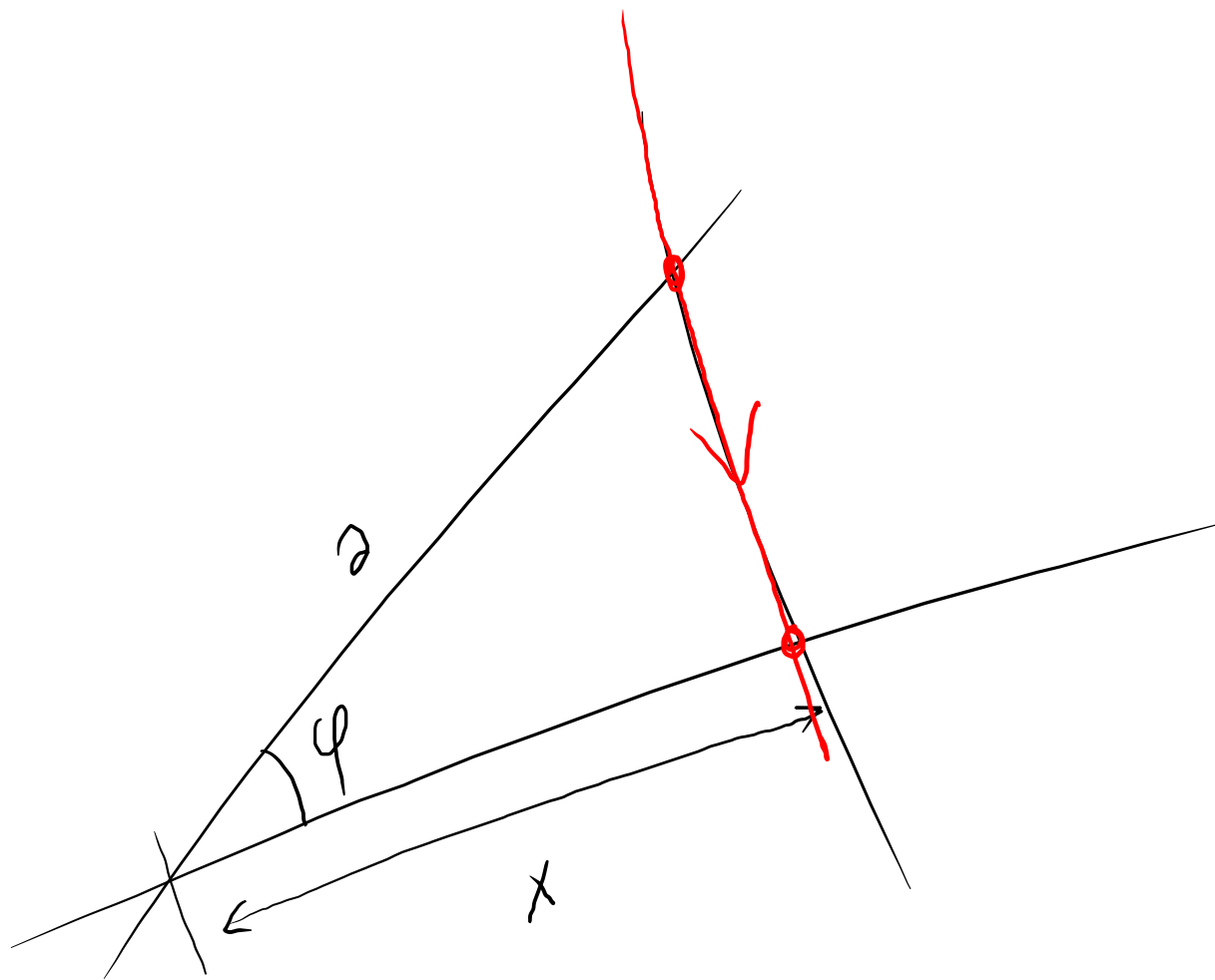
$$\vec{p} = k \cdot \vec{b}$$

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

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

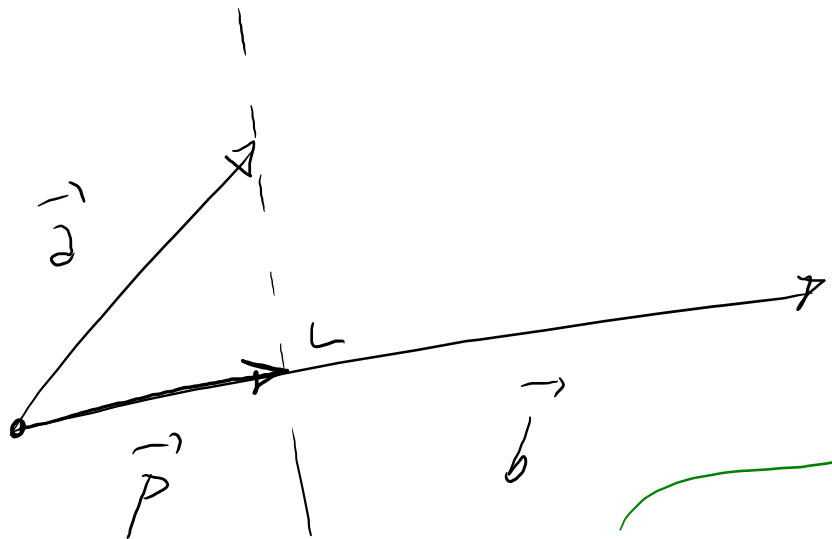
formule

$$= (\vec{a} \cdot \vec{b}) \cdot \frac{\vec{b}}{\|\vec{b}\|^2} = \frac{\vec{a} \cdot \vec{b}}{\|\vec{b}\|^2} \cdot \vec{b}$$



$$\cos \varphi = \frac{x}{a}$$

$$x = a \cdot \cos \varphi$$



composantes de \vec{p}

$$\vec{a} = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$$

$$\vec{b} = \begin{pmatrix} 5 \\ 1 \end{pmatrix}$$

$$\|\vec{b}\| = \sqrt{25+1} = \sqrt{26}$$

$$\vec{p} = \frac{\begin{pmatrix} 1 \\ 2 \end{pmatrix} \cdot \begin{pmatrix} 5 \\ 1 \end{pmatrix}}{(\sqrt{26})^2} \cdot \vec{b} = \frac{5+2}{26} \cdot \vec{b}$$

$$= \frac{7}{26} \cdot \begin{pmatrix} 5 \\ 1 \end{pmatrix}$$

$$= \begin{pmatrix} 35/26 \\ 7/26 \end{pmatrix}$$

$$\vec{p} = \frac{\vec{a} \cdot \vec{b}}{\|\vec{b}\|^2} \cdot \vec{b}$$

\vec{p} est la projection
de \vec{a} sur \vec{b}

longueur de \vec{p}

$$\|\vec{p}\| = \frac{|\vec{a} \cdot \vec{b}|}{\|\vec{b}\|}$$

$$\|\vec{p}\| = \frac{7}{\sqrt{26}}$$

