Ex1

$$\dfrac{}{V_{leman}} = 70 \cdot 10^3 \cdot 10^4 \cdot 10^2 = 7,0 \cdot 10^{10} \ m^3$$

Ex2

1 bras
20 pas

Ex 3

X

?
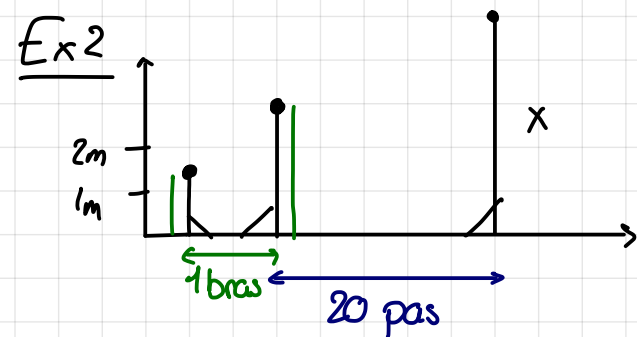
Ex 4 :

m, g, k, w, s

Ex 5

$$d = v \cdot t \qquad a = \dfrac{v}{t} \qquad a = \dfrac{d}{t^2} \qquad E = \dfrac{1}{2} m \cdot v^2$$

Ex 6

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

3.) $\|\vec{w}\| = \sqrt{3^2 + 6^2} = \sqrt{9 + 36} = \sqrt{45}$

4.) $\tan(\theta) = \dfrac{6}{3} = 2 \Rightarrow \tan^{-1}(2)$

5) $2 \cdot \begin{pmatrix} 1 \\ 3 \end{pmatrix} - \dfrac{1}{2} \begin{pmatrix} 2 \\ 3 \end{pmatrix} = \begin{pmatrix} 2 \\ 6 \end{pmatrix} - \begin{pmatrix} 1 \\ 3/2 \end{pmatrix} = \begin{pmatrix} 1 \\ 9/2 \end{pmatrix}$
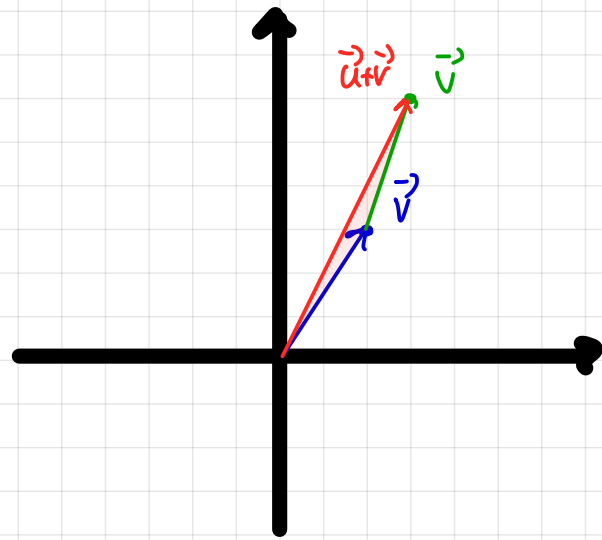
Ex 7

$$\|\vec{S}\| = \sqrt{S_x^2 + S_y^2} \qquad \theta = \tan^{-1}\left(\dfrac{S_y}{S_x}\right)$$

$\vec{S_1} = \begin{pmatrix} 1 \\ 1 \end{pmatrix} \qquad \|\vec{S_1}\| = \sqrt{2} \qquad \theta = \tan^{-1}(1) = \pi/4$

$\vec{S}_{1\ polaire} = \begin{pmatrix} \sqrt{2} \\ \pi/4 \end{pmatrix}$

$\vec{S_2} = \begin{pmatrix} -1 \\ 1 \end{pmatrix} \qquad \|\vec{S_2}\| = \sqrt{2} \qquad \theta = \tan^{-1}(-1) = -\pi/4$

$\vec{S}_{2\ pol} = \begin{pmatrix} \sqrt{2} \\ -\pi/4 \end{pmatrix}$

Ex 8

$$\vec{w} = \vec{u} + \vec{v} = \begin{pmatrix} 3 \\ 6 \end{pmatrix}$$

$$\|\vec{w}\| = \sqrt{3^2 + 6^2} = \sqrt{9+36} = \sqrt{45} = 3\sqrt{5}$$

4) $\cos(\theta) = \dfrac{w_x}{\|\vec{w}\|} \iff \cos^{-1}\left(\dfrac{w_x}{\|\vec{w}\|}\right) = \theta = \cos^{-1}\left(\dfrac{3}{3\sqrt{5}}\right) = 1,11 \text{ rad}$

5) $2\vec{u} - \dfrac{1}{2}\vec{v} = \begin{pmatrix} 4 \\ 6 \end{pmatrix} - \begin{pmatrix} 1 \\ 3/2 \end{pmatrix} = \begin{pmatrix} 3 \\ 9/2 \end{pmatrix}$

II.