

a)  $\vec{u} + \vec{v} =$

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

b)  $\vec{u} - \vec{v} = \vec{u} + (-1)\vec{v}$

$\vec{v} - \vec{u} = \vec{v} + (-1)\vec{u}$



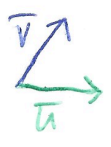
c)  $2\vec{u} + 3\vec{v}$



d)  $2\vec{u} - 3\vec{v} = 2\vec{u} + (-3)\vec{v}$



2.3



$$\begin{cases} \bar{u}' + \bar{v}' = \bar{u} \\ 2\bar{u}' + 3\bar{v}' = \bar{v} \end{cases} \Leftrightarrow$$

$$\begin{cases} \bar{u}' + \bar{v}' = \bar{u} \\ \bar{v}' = \bar{v} - 2\bar{u} \end{cases}$$

$$\bar{u}' + \bar{v}' = \bar{u} \Leftrightarrow$$

$$\bar{u}' = \bar{u} - \bar{v}' = \bar{u} - (\bar{v} - 2\bar{u}) = 3\bar{u} - \bar{v}$$

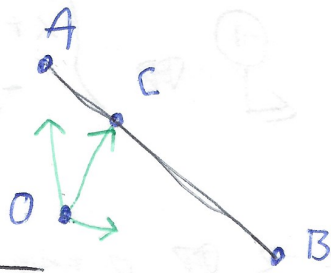
$$\begin{cases} \bar{u}' = 3\bar{u} - \bar{v} \\ \bar{v}' = \bar{v} - 2\bar{u} \end{cases}$$

$\bar{u}'$

$\bar{v}'$



2.4



$$\overline{AC} = \frac{1}{4} \overline{AB} \quad ; \quad \overline{CB} = \frac{3}{4} \overline{AB}$$

visà:  $\overline{OC} = \frac{3}{4} \overline{OA} + \frac{1}{4} \overline{OB}$ .

$$\left. \begin{aligned} \overline{OA} &= \overline{OC} + \overline{CA} \\ \overline{OB} &= \overline{OC} + \overline{CB} \end{aligned} \right\}$$

~~$$\overline{OA} + \overline{OB} = \overline{OC} + \overline{CA} + \overline{OC} + \overline{CB} = 2\overline{OC} + \overline{CA} + \overline{CB}$$~~

~~$$\overline{OA} - \overline{OB} = \overline{CA} - \overline{CB} = \frac{3}{4} \overline{AB}$$~~

$$\begin{cases} \overline{OA} = \overline{OC} + \overline{CA} \\ \overline{OB} = \overline{OC} + \overline{CB} \end{cases} \Leftrightarrow \begin{cases} \overline{OA} = \overline{OC} - \frac{1}{4} \overline{AB} \\ \overline{OB} = \overline{OC} + \frac{3}{4} \overline{AB} \end{cases} \begin{matrix} (-) \\ \leftarrow \end{matrix}$$

$$\Leftrightarrow \begin{cases} \overline{OA} = \overline{OC} - \frac{1}{4} \overline{AB} \\ \overline{OB} - \overline{OA} = \overline{AB} \end{cases}$$

$$\Leftrightarrow \overline{OA} = \overline{OC} - \frac{1}{4} (\overline{OB} - \overline{OA})$$

~~$$\overline{OC} = -\frac{1}{4} (\overline{OB} - \overline{OA}) - \overline{OA}$$~~

~~$$= \frac{3}{4} \overline{OA} - \frac{1}{4} \overline{OB}$$~~

"C'est vrai en plus"

$$\overline{OC} = \overline{OA} + \frac{1}{4} (\overline{OB} - \overline{OA}) =$$

$$= \boxed{\frac{1}{4} \overline{OB} + \frac{3}{4} \overline{OA}}$$

2.5

1.19

1.19

$$\begin{cases} x+ay = 1 \\ x-y = -1 \end{cases} \quad \text{①}$$

$$\begin{cases} x+ay = 1 \\ -y-ay = -2 \end{cases}$$

$$\Leftrightarrow -y-ay = -2 \quad \Leftrightarrow y+ay = 2 \quad \Leftrightarrow$$

$$y(1+a) = 2 \quad \Leftrightarrow y = \frac{2}{1+a}$$

$$x + a\left(\frac{2}{1+a}\right) = 1 \quad \Leftrightarrow$$

$$x = 1 - \frac{2a}{1+a} \quad a \neq -1$$

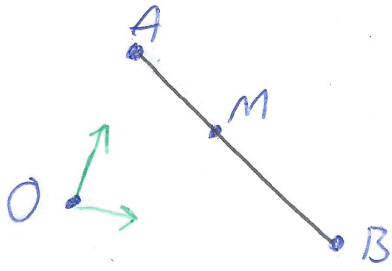
Sre:

Om  $a = -1$  således lsg, i altmindst  
for tanno lsg.

$$(x, y) = \left( \frac{1-a}{1+a}, \frac{2}{1+a} \right)$$

$$\boxed{\frac{1-a}{1+a} - \frac{2}{1+a} = \frac{1-a-2}{1+a} = \frac{-1-a}{1+a} = -1}$$

2.5



$$\overline{MB} = \overline{AM} = \frac{1}{2} \overline{AB}$$

$$\overline{OM} = \frac{1}{2} (\overline{OA} + \overline{OB})$$

$$\begin{cases} \overline{OA} = \overline{OM} + \overline{MA} \\ \overline{OB} = \overline{OM} + \overline{MB} \end{cases} \Leftrightarrow \begin{cases} \overline{OA} = \overline{OM} + \overline{MA} \\ \overline{OB} - \overline{OA} = \overline{MB} - \overline{MA} \end{cases}$$

$$\Leftrightarrow \begin{cases} \overline{OM} = \overline{OA} - \overline{MA} \\ -\overline{OA} = \overline{MB} - \overline{MA} - \overline{OB} \end{cases} \Leftrightarrow \begin{cases} \overline{OM} = \overline{OA} - \overline{MA} \\ \overline{OA} = -\overline{MB} + \overline{MA} + \overline{OB} \end{cases}$$

$$\overline{OM} = (\overline{MB} - \overline{MA} - \overline{OB}) - \overline{MA} = \overline{MB} - 2\overline{MA} - \overline{OB}$$

$$\overline{OM} = (-\overline{MB} + \overline{MA} + \overline{OB}) - \overline{MA} = \overline{OB} - \overline{MB} = \overline{OB} + \overline{BM}$$

$$\Rightarrow \begin{cases} \overline{OA} = \overline{OM} + \frac{1}{2} \overline{AB} \\ \overline{OB} = \overline{OM} + \frac{1}{2} \overline{AB} \end{cases} \Leftrightarrow \begin{cases} \overline{OM} = \overline{OA} + \frac{1}{2} \overline{AB} \\ \overline{OM} = \overline{OB} - \frac{1}{2} \overline{AB} \end{cases}$$

$$\overline{OM} = \overline{OA} + \frac{1}{2} \overline{AB}$$

$$\overline{OM} = \overline{OA} + \frac{1}{2} \overline{AB}$$

$$2\overline{OM} = \overline{OB} + \overline{OA}$$

$$\overline{OM} + \overline{OM} = \overline{OB} + \frac{1}{2} \overline{AB}$$

$$2\overline{OM} = \overline{OB} + \overline{OA} \Leftrightarrow \overline{OM} = \frac{(\overline{OB} + \overline{OA})}{2}$$