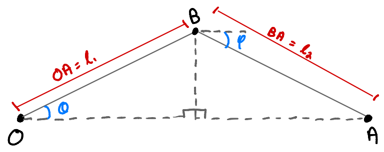
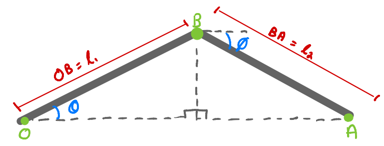
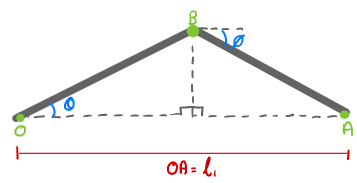






Position

$\vec{OA} = \vec{OB} + \vec{BA}$

on sait ca à cause des lois trigonometrique

$$\vec{OA} = \begin{pmatrix} OB\cos(\theta) \\ OB\sin(\theta) \end{pmatrix} + \begin{pmatrix} BA\cos(\varphi) \\ -BA\sin(\varphi) \end{pmatrix}$$

on entre les valeurs

$$A = \begin{pmatrix} l_1\cos(\theta) + l_2\cos(\varphi) \\ l_1\sin(\theta) - l_2\sin(\varphi) \end{pmatrix}$$

Puisque O et iorigine on peut enlever le O et ajouter les valeurs

maintenant on peut dériver A pour avoir vitesse

$$V_A = \frac{dA}{dt} = \begin{pmatrix} -l_1\dot{\theta}\sin(\theta) - l_2\dot{\varphi}\sin(\varphi) \\ l_1\dot{\theta}\cos(\theta) - l_2\dot{\varphi}\cos(\varphi) \end{pmatrix}$$

Pour trouver accélération on dérive vitesse

$$A_A = \frac{dV_A}{dt} = \begin{pmatrix} -l_1\ddot{\theta}\sin(\theta) - l_1\dot{\theta}^2\cos(\theta) - l_2\ddot{\varphi}\sin(\varphi) - l_2\dot{\varphi}^2\cos(\varphi) \\ l_1\ddot{\theta}\cos(\theta) - l_1\dot{\theta}^2\sin(\theta) - l_2\ddot{\varphi}\sin(\varphi) + l_2\dot{\varphi}^2\sin(\varphi) \end{pmatrix}$$

$$X_A = \begin{pmatrix} l_1\cos(\theta) + l_1\cos(\theta) \\ l_1\sin(\theta) - l_1\sin(\theta) \end{pmatrix} = \begin{pmatrix} 2 \cdot l_1 \cdot \cos(\theta) \\ 0 \end{pmatrix}$$

$$V_{\vec{A}} = \begin{pmatrix} -l_1 W_{OB}\sin(\theta) - l_1 W_{OB}\sin(\theta) \\ l_1 W_{OB}\cos(\theta) - l_1 W_{OB}\cos(\theta) \end{pmatrix}$$

$\dot{\theta} = W_{OB}$

$W_{OB} = W_{AB} = \dot{\varphi}$

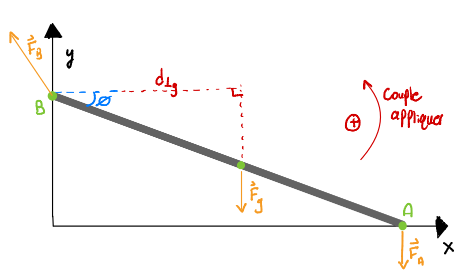
$$= \begin{pmatrix} -2 \cdot (l_1 \cdot W_{OB} \cdot \sin(\theta) \\ 0 \end{pmatrix}$$

$$\vec{A}_A = \begin{pmatrix} -l_1 \cdot 0 \cdot \sin(\theta) - l_1 W_{OB}^2\cos(\theta) - l_1 \cdot 0 \cdot \sin(\theta) - l_1 W_{OB}^2\cos(\theta) \\ l_1 \cdot 0 \cdot \cos(\theta) - l_1 W_{OB}^2\sin(\theta) - l_1 \cdot 0 \cdot \cos(\theta) + l_1 W_{OB}^2\sin(\theta) \end{pmatrix}$$

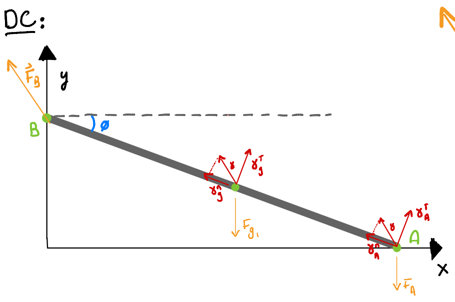
$\ddot{\theta} = \ddot{\varphi} = 0$

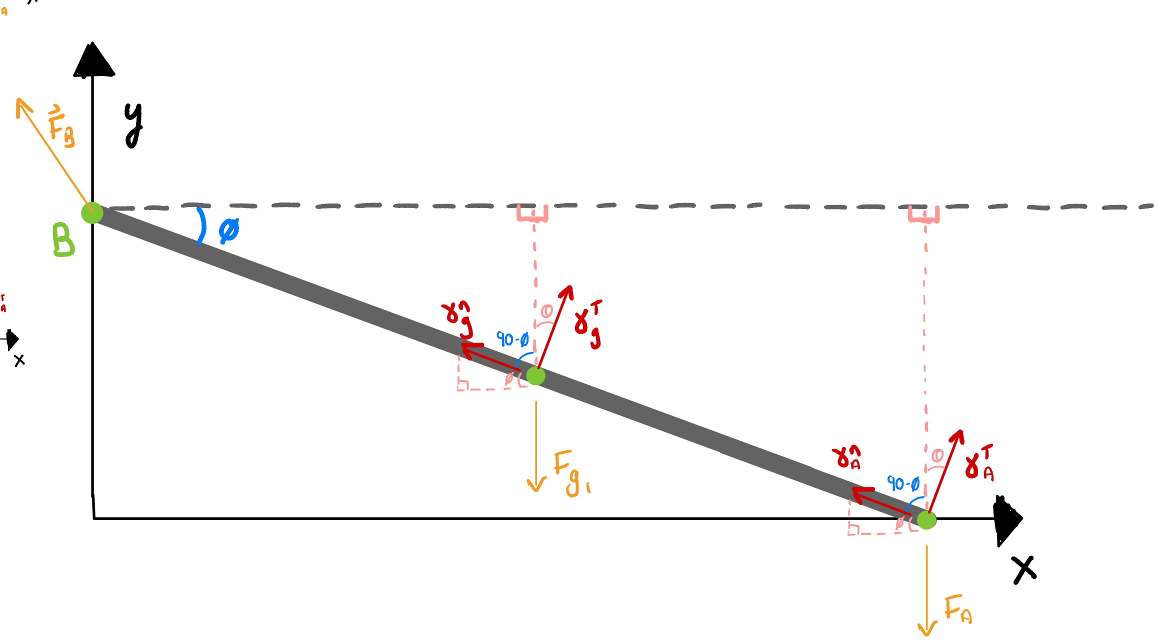
$$= \begin{pmatrix} -2 \cdot (l_1 W_{OB}^2\cos(\theta) \\ 0 \end{pmatrix}$$

DCL:

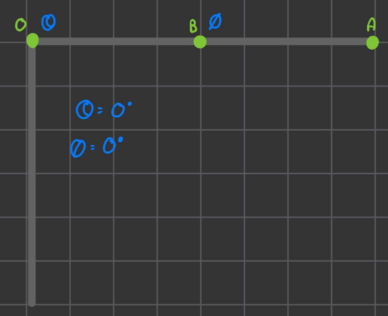


DC:

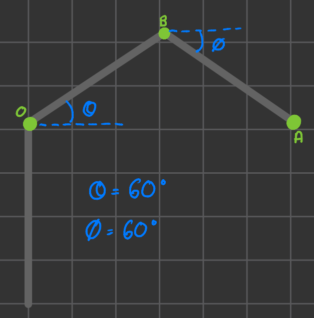




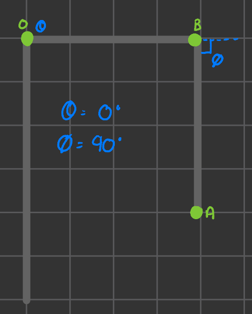
Horizontal à 0



Horizontal à π/3



Vertical à 0



Vertical à π/3