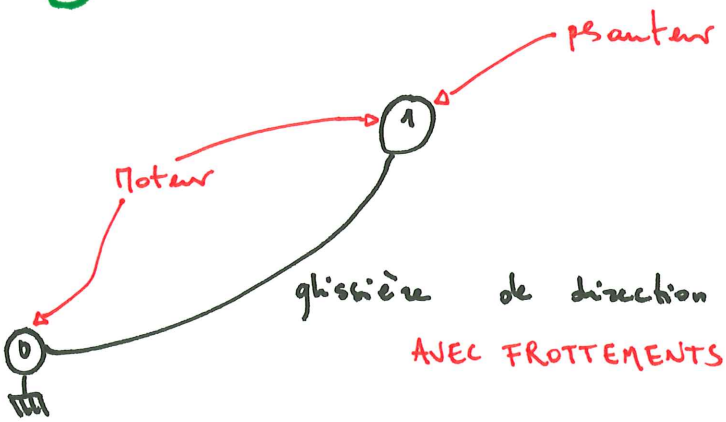
MACHINE DE TRACTION

① 

$$\{0 \xrightarrow{g} 1\} = \begin{cases} \vec{R}_{0\,g\,1} = X_{01}\cdot\vec{x_0} \pm F_r\cdot\vec{y_0} \underbrace{- k\cdot\dot{y}\cdot\vec{y_0}}_{= -k\cdot\vec{V}_{G\in 1/0}} + Z_{01}\cdot\vec{z_0} \\ \vec{M}_{0,0\,g\,1} = L_{01}\cdot\vec{x_0} + M_{01}\cdot\vec{y_0} + N_{01}\cdot\vec{z_0} \end{cases}$$

k : coefficient de frottement visqueux ($N/(m/s)$)
F_r : " " " sec (N)

② J'isole 1 soumis aux actions mécaniques extérieures suivantes :
- $0 \xrightarrow{g} 1$
- $0 \xrightarrow{mot} 1$
- pesanteur $\rightarrow 1$

J'écris le th. des résultantes en projection sur $\vec{y_0}$:

$$\underbrace{\vec{R}_{0\,g\,1}\cdot\vec{y_0}}_{\pm F_r - k\dot{y}} + \underbrace{\vec{R}_{0\,mot\,1}\cdot\vec{y_0}}_{F_m} + \underbrace{\vec{R}_{pes\rightarrow 1}\cdot\vec{y_0}}_{-m\cdot g} = \vec{R}_{d\,1/0}\cdot\vec{y_0}$$

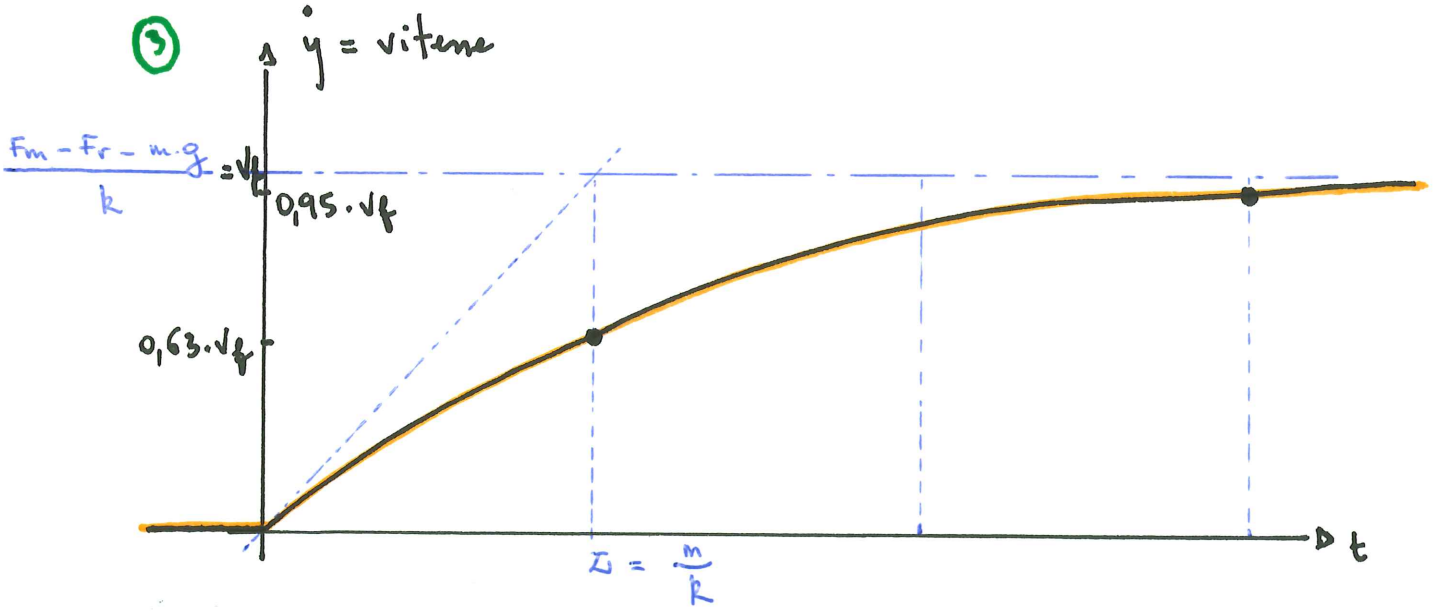
$$\vec{R}_{d\,1/0}\cdot\vec{y_0} = m\cdot\frac{d}{dt}\left(\vec{V}_{G\in 1/0}\right)_0\cdot\vec{y_0}$$

$$= m\cdot\frac{d}{dt}\left(\vec{V}_{G\in 1/0}\cdot\vec{y_0}\right)$$

$$= m\cdot\ddot{y}$$

On a donc : $F_m \pm F_r - m\cdot g = m\cdot\ddot{y} + k\cdot\dot{y}$

(3)



$$\frac{F_m - F_r - m \cdot g}{m} = \underbrace{\ddot{y}}_{m/s^2} + \underbrace{\frac{k}{m}}_{= \frac{1}{\tau}} \cdot \underbrace{\dot{y}}_{m/s}$$