

Resumé pottemmet

Q1 $\vec{R}_l = m \ddot{x}_0 \vec{x}_0$; $\vec{S}(P, \mathcal{E}_0) = \vec{0}$

Q2 $\{T_{1 \rightarrow S}\} = \left\{ \begin{matrix} T_1 \vec{x}_0 + N_1 \vec{y}_0 \\ \vec{0} \end{matrix} \right\}_P = \left\{ \begin{matrix} N_1 (\ell \vec{x}_0 + \vec{y}_0) \\ \vec{0} \end{matrix} \right\}_P$

$\{T_{2 \rightarrow S}\} = \left\{ \begin{matrix} -T_2 \vec{x}_0 + N_2 \vec{y}_0 \\ \vec{0} \end{matrix} \right\}_Q = \left\{ \begin{matrix} N_2 (-\ell \vec{x}_0 + \vec{y}_0) \\ \vec{0} \end{matrix} \right\}_Q$

Q3 $\{T_{P_0 \rightarrow S}\} = \left\{ \begin{matrix} \vec{F} \\ \vec{R}(P) \end{matrix} \right\}_P$

$\vec{F} = -m \cdot g \cdot \vec{y}_0$
 $\vec{R}(P) = \vec{R}(G) + PG \wedge \vec{F}$
 $= \vec{0} + (\ell + x) \vec{x}_0 \wedge (-mg \vec{y}_0)$
 $= -mg(\ell + x) \vec{z}_0$

$\{T_{2 \rightarrow S}\} = \left\{ \begin{matrix} N_2 (-\ell \vec{x}_0 + \vec{y}_0) \\ + 2\ell N_2 \end{matrix} \right\}_P$

Q4 PFD :

$m \ddot{x} = N_1 \ell - N_2 \ell$	①
$0 = N_1 + N_2 - mg$	②
$0 = 2 \cdot \ell \cdot N_2 - mg(\ell + x)$	③

③ $\Rightarrow N_2 = \frac{mg(\ell + x)}{2\ell}$

② $\Rightarrow N_1 = mg - N_2 = \dots$

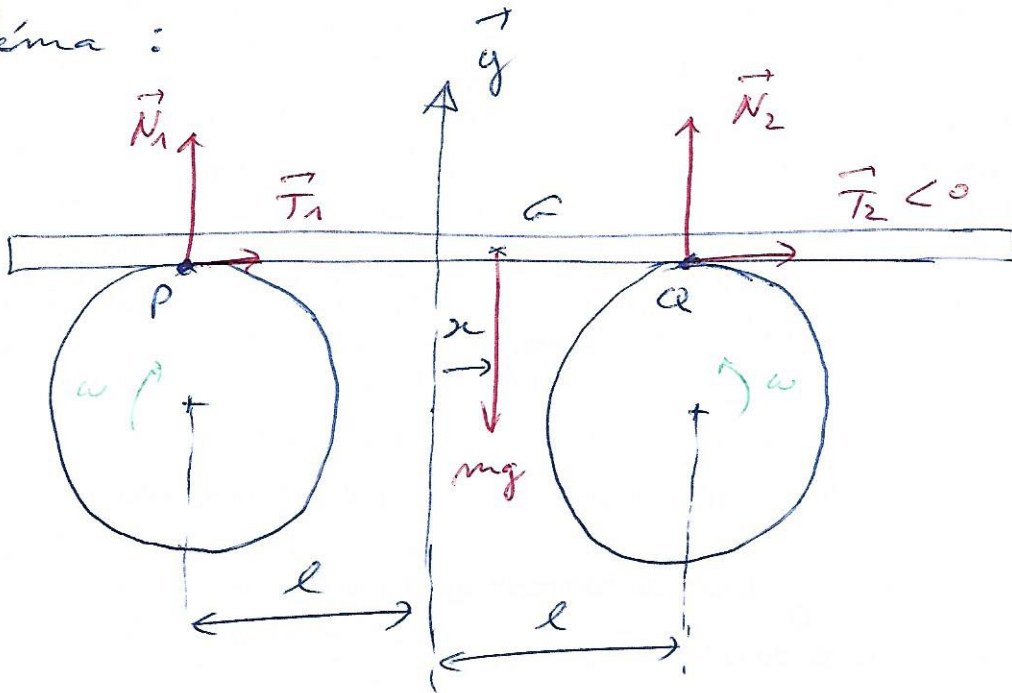
$N_A = \frac{mg(\ell - x)}{2\ell}$

Q5 ① $\Rightarrow m \ddot{x} = -\ell \frac{2mgx}{2\ell} \Rightarrow m \ddot{x} + \frac{\ell mg}{l} x = 0$

Q6 R ≠ 0
 $\vec{S}(P, \mathcal{E}_0) = \vec{S}(G, \mathcal{E}_0) + PG \wedge \vec{R}_l$
 $= \vec{0} + [(\ell + x) \vec{x}_0 + R \vec{y}_0] \wedge m \ddot{x} \vec{x}_0$
 $= -m \ddot{x} \cdot R \cdot \vec{z}_0$

Resure frottement

Schéma :



$$\text{PFD} \Rightarrow \begin{cases} m \ddot{x} = T_1 + T_2 \\ 0 = N_1 + N_2 - mg \\ 0 = 2l N_2 - (l+x)mg \end{cases}$$

$$\text{de plus : } \begin{cases} T_1 = f \cdot N_1 \\ T_2 = -f \cdot N_2 \end{cases}$$

5 équations } \Rightarrow On peut résoudre ...
5 inconnues