Compléments
Travail, énergies, ressorts, poussée d'Archimède

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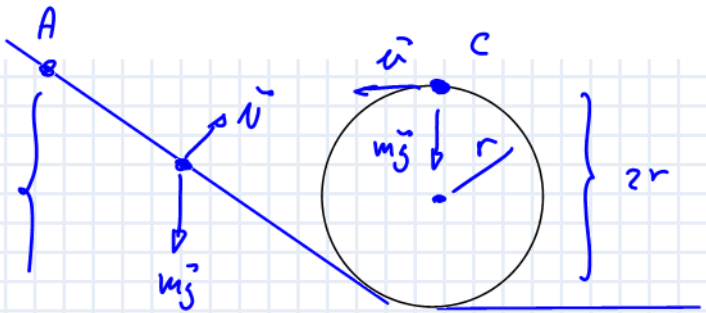
Big loop



C : $\vec{N} = 0$

$\sum \vec{F}^{ext} = m\vec{g} = m\vec{a}$

$\vec{a} = -\rho\dot{\varphi}^2\vec{e}_\rho + \dots(\dot{\rho}, \ddot{\varphi})$ $\quad \dot{\rho} = 0 \quad \rho = r$

$a = \frac{v^2}{r} = g$ $\quad \ddot{\varphi} = 0 \quad r\dot{\varphi} = v$

$v_c^2 = r \cdot g$!

$E_{m,A} = mgh$

$E_{m,C} = \frac{1}{2}mv_c^2 + 2mgr = \frac{5}{2}mgr$

$$E_{m,A} = mgh$$

$$E_{m,C} = \frac{1}{2} m v_C^2 + 2mgr = \frac{5}{2} mgr$$

Force conservative $E_{m,A} = E_{m,B}$

$$mgh = \frac{5}{2} mgr$$

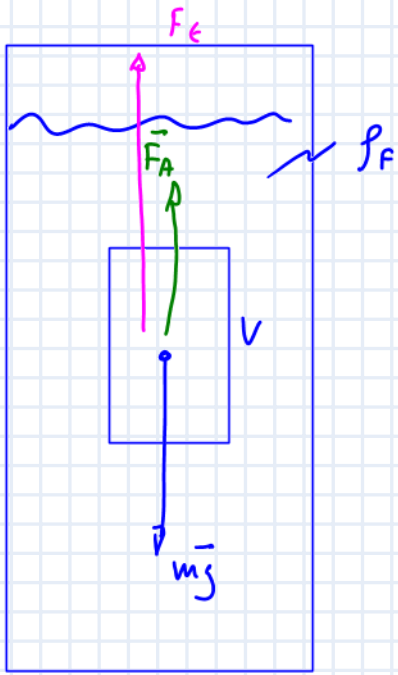
$$\boxed{h = \frac{5}{2} r}$$

Force d'un ressort

$$\vec{F}_k = -k x \vec{e}_x$$

$$F \sim x$$

Poussée d'Archimède



$$F_A = \rho_F \cdot V \cdot g$$

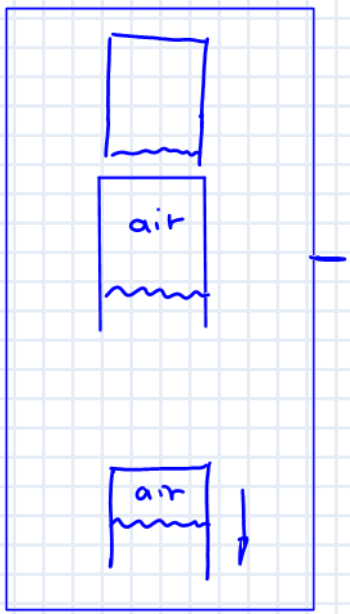
m_F

① $mg = F_t$ 2.85 kg

② $mg - F_A = F_t$ 1.80 kg

$F_A = mg - F_t$

Coulage du flotteur creux

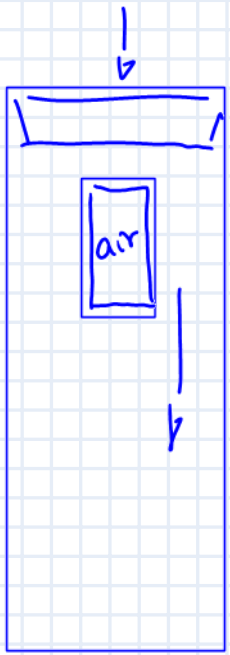


$F_A > mg$

$F_A = mg$

$F_A < mg$

le ludion



$F_A = mg$

$F_A < mg$