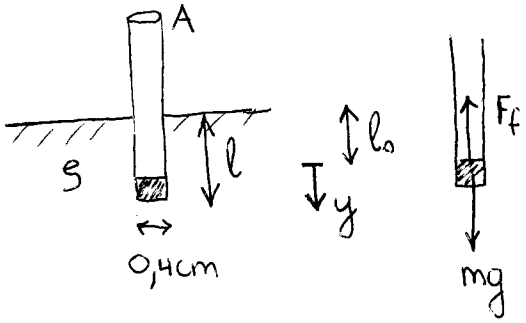
3.) $\varrho = 0{,}8 \frac{g}{cm^3}$ $\quad T = ?$

$m = 0{,}2\ kg$ $\quad d = 0{,}4cm$



$$\boxed{\vec{a} = \frac{\vec{F_e}}{m}} \qquad \boxed{F_f = m_f \cdot g} \qquad \boxed{\omega = \frac{2\pi}{T}}$$

$$F_f = m_f \cdot g = l A \varrho g \qquad A = \left(\frac{d}{2}\right)^2 \pi$$

egyensúly ha $l = l_0$ $\quad F_e = 0$ $\quad l_0 A \varrho g = mg$

$$ma = -lA\varrho g + mg$$

$$ma = -lA\varrho g + l_0 A \varrho g = -A\varrho g (l - l_0) \qquad y = l - l_0$$

$$a = -\frac{A\varrho g}{m} y$$

$$\ddot{y} + \underbrace{\frac{A\varrho g}{m}}_{\omega^2} y = 0 \qquad \ddot{y} + \omega^2 y = 0$$ harmónikus rezgőmozgás

$$\omega = \sqrt{\frac{A\varrho g}{m}} = \frac{2\pi}{T}$$

$$T = 2\pi \sqrt{\frac{m}{A\varrho g}}$$