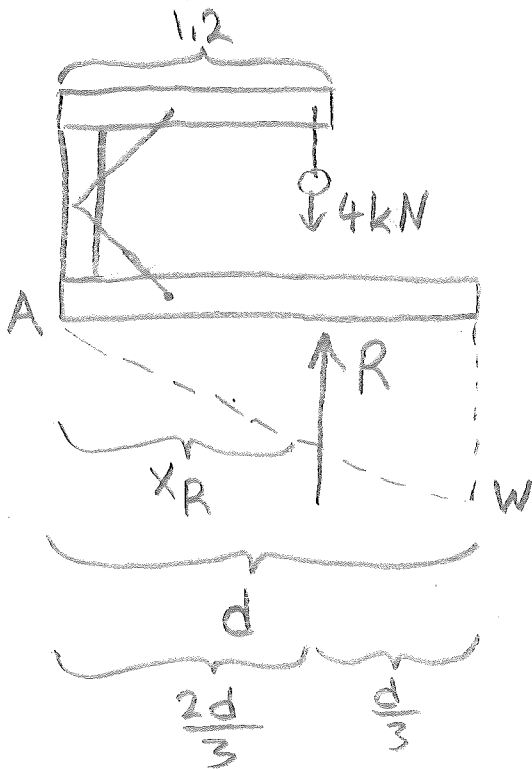


# Föreläsning 2 | 05/03-15

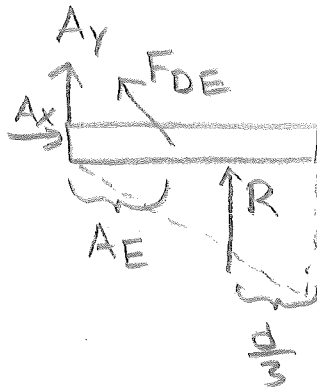
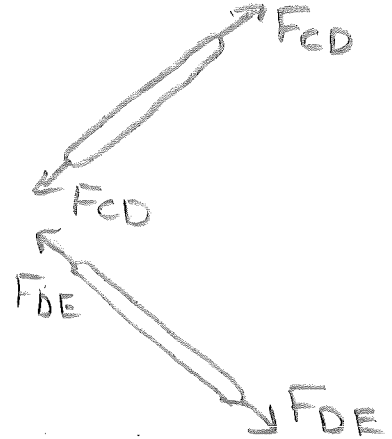
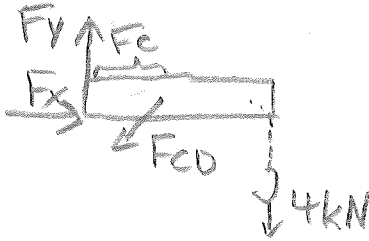
Extenta 10/03-14

1) Frilägg

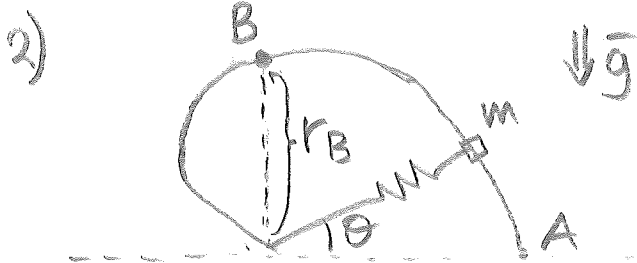


$$\sum F_y \Rightarrow R - 4 = 0$$

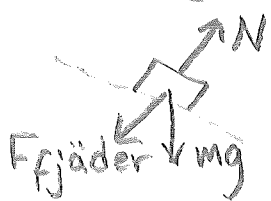
$$\sum \vec{M}_A \Rightarrow 1,2 \cdot 4 - R \cdot x_R = 0$$



Fortsättningen finns på kurshemsidan.



Frilägg hylsan



$$r = 0,3(1 + \cos \theta)$$

$$\theta_A = 0^\circ$$

$$\theta_B = 90^\circ$$

Allmänt uttryck för energi/arb.

$$U'_{A-B} = (T_B - T_A) + (V_{gB} - V_{gA}) + (V_{fB} - V_{fA}) = 0$$

Läge A

$$T_A = 0$$

$$V_{gA} = 0$$

$$V_{fA} = \frac{k}{2}(r_A - l_0)^2$$

Läge B

$$T_B = \frac{1}{2}mv_B^2$$

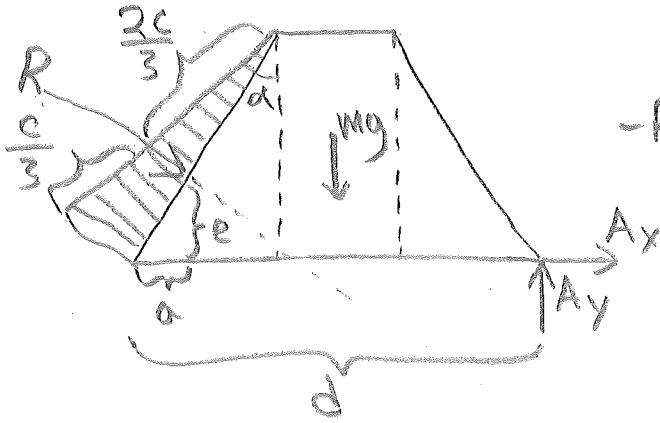
$$V_{gB} = mgr_B$$

$$V_{fB} = \frac{k}{2}(r_B - l_0)^2$$

Insättning ger:

$$v_B = 3 \text{ m/s}$$

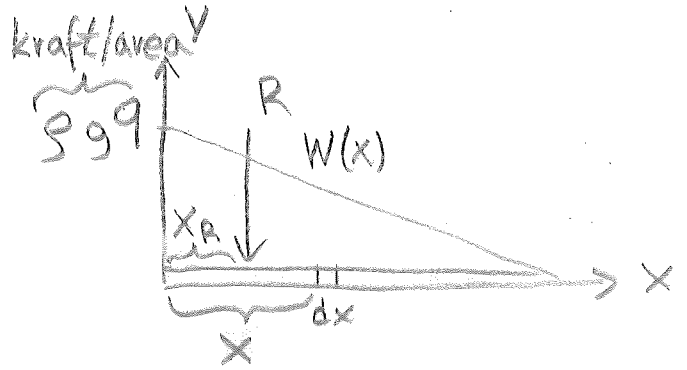
3)



$$\sum \vec{M}_A = 0$$

$$-R \cos \alpha \cdot e + R \sin \alpha (d-a) + mg \frac{d}{2} = 0$$

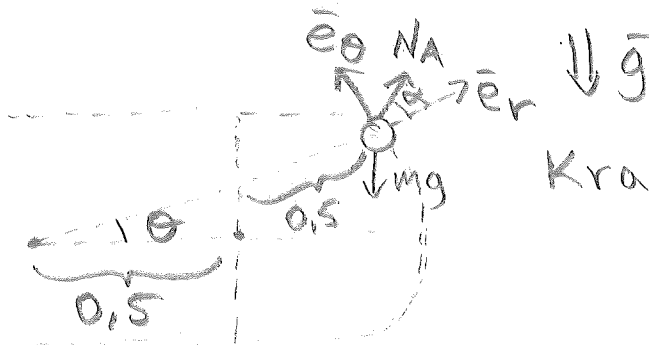
$$R = \frac{1}{2} \cdot \underbrace{\rho_v \cdot g \cdot c \cdot b}_{\text{tryck längst ner area}} \cdot \underbrace{c}_{\text{medel trycket}}$$



$$R = \int_0^c b \left( \rho_v g c - \frac{\rho_v g}{c} c x \right) dx$$

$$x_R R = \int_0^c x b \left( \rho_v g c - \frac{\rho_v g}{c} c x \right) dx$$

4)



Kraftekvationer i cylinderkoordinat

$$\sum \vec{F} = m \vec{a}_g$$

$$\alpha = \theta = 30^\circ$$