

De vraag is: Slipt de cilinder Ja of Nee

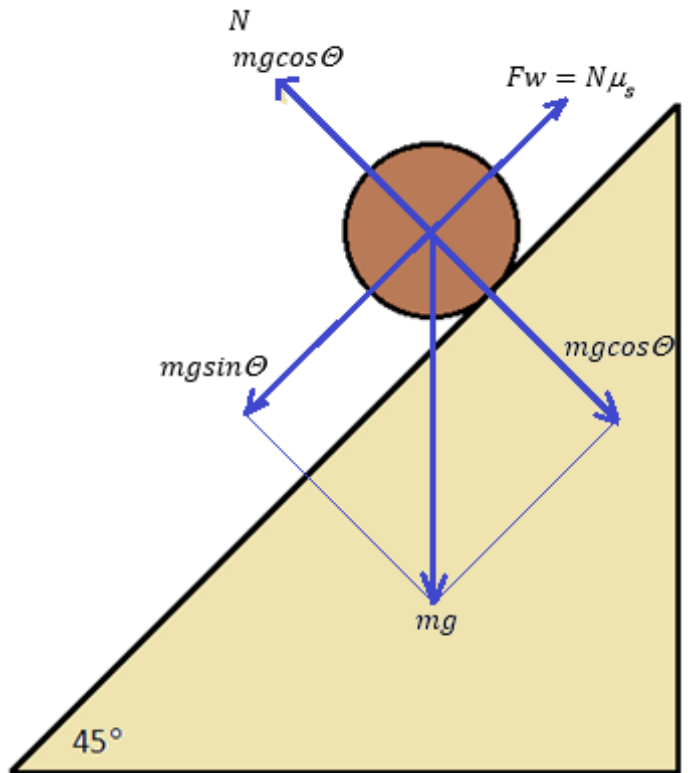
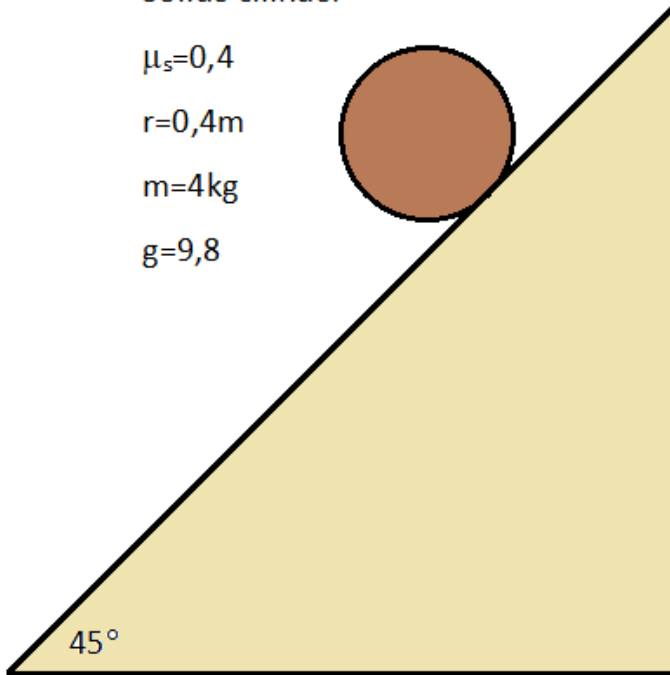
Solide cilinder

$$\mu_s = 0,4$$

$$r = 0,4\text{m}$$

$$m = 4\text{kg}$$

$$g = 9,8$$



$$a = \alpha \cdot R$$

$$\alpha = \frac{a}{R}$$

$$T = I\alpha \quad I = \frac{1}{2}mR^2$$

$$F_w \cdot R = \frac{1}{2}mR^2 \frac{a}{R}$$

$$F_{w_{\max}} = \frac{1}{2}ma$$

$$a_{\max} = \frac{2F_w}{m} = \frac{2\mu_s mg \cos \Theta}{m} = 2\mu_s g \cos \Theta = 5,5437\text{m/s}^2$$

$$F_{\text{res}} = ma$$

$$mg \sin \Theta - \mu_s mg \cos \Theta = ma$$

$$F_{\max} - F_{w_{\max}} = ma$$

$$F_{\max} = F_{w_{\max}} + ma = \frac{1}{2}ma + ma = \frac{3}{2}ma = 33,262\text{N}$$

$$F = mg \sin \Theta = 4(9,8) \sin 45 = 27,718\text{N}$$

$$F < F_{\max} \quad \text{dus Nee, geen Slip!!}$$