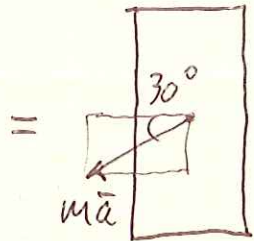
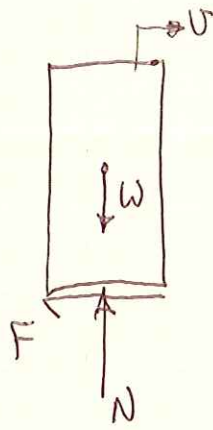


PROB. 16-12

$\mu_s = 0.25$, FIND α FOR CAN TO SLIDE,
w/d FOR CAN TO TIP.

CAN WILL SLIDE:



$$\Sigma F_x = ma_x:$$

$$-F = -\mu N = -ma \cos 30^\circ$$

$$\mu N = \left(\frac{W}{g}\right) a \cos 30^\circ$$

$$\Sigma F_y = ma_y: N - W = -ma \sin 30^\circ$$

$$N = W - \left(\frac{W}{g}\right) a \sin 30^\circ = W \left[1 - \left(\frac{a}{g}\right) \sin 30^\circ \right]$$

$$\mu W \left[1 - \left(\frac{a}{g}\right) \sin 30^\circ \right] = \left(\frac{W}{g}\right) a \cos 30^\circ$$

$$\mu - \left(\frac{\mu}{g} \sin 30^\circ\right) a = \left[\left(\frac{1}{g}\right) \cos 30^\circ\right] a$$

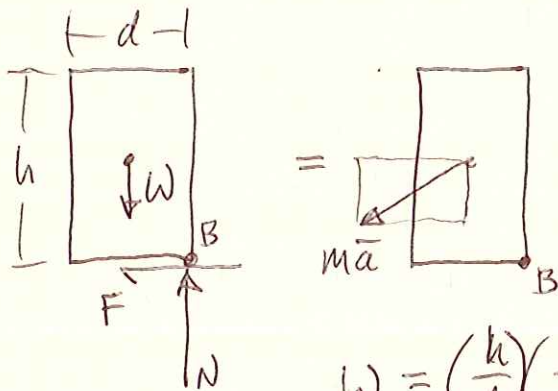
$$\left[\left(\frac{1}{g}\right) \cos 30^\circ + \left(\frac{\mu}{g}\right) \sin 30^\circ\right] \cdot a = \mu$$

$$a = \frac{\mu g}{\left(\cos 30^\circ + \mu \sin 30^\circ\right)} = \frac{(0.25)}{\left[\cos 30^\circ + (0.25) \sin 30^\circ\right]}$$

$$a = 0.2523 \cdot g \quad \nearrow 30^\circ$$

PROB. 16-12 CONT.

CAN WILL TIP CW \Rightarrow :



$$\sum \vec{M}_B = \sum (\vec{M}_B)_{\text{EFF}} \quad (+^{\circ})$$

$$\left(\frac{d}{2}\right)W = \left(\frac{h}{2}\right)ma \cdot \cos 30^\circ + \left(\frac{d}{2}\right)ma \cdot \sin 30^\circ$$

$$W = \left(\frac{h}{d}\right)\left(\frac{W}{g}\right)a \cdot \cos 30^\circ + \left(\frac{W}{g}\right)a \cdot \sin 30^\circ$$

$$\left(\frac{h}{d}\right)\left(\frac{a}{g}\right) \cos 30^\circ = 1 - \left(\frac{a}{g}\right) \cdot \sin 30^\circ$$

$$\left(\frac{h}{d}\right) = \frac{\left(\frac{g}{a}\right) - \sin 30^\circ}{\cos 30^\circ} = \frac{\left(\frac{9}{0.25239}\right) - \sin 30^\circ}{\cos 30^\circ}$$

$$\left(\frac{h}{d}\right) = 4.0$$