

IFT1001, Nicolai H. Brand, 2022

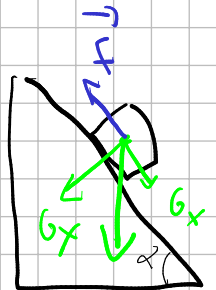
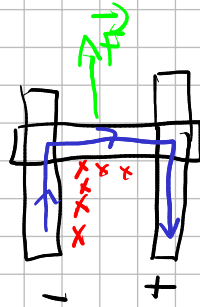
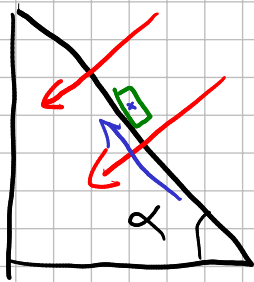
Øving 8

①

$$d = 2,0 \text{ m}$$

$$B = 0,16 \text{ T}$$

$$\alpha = 30^\circ$$



$$\vec{v} = 0 \Rightarrow \sum F = 0$$

$$G_x - I l B = 0$$

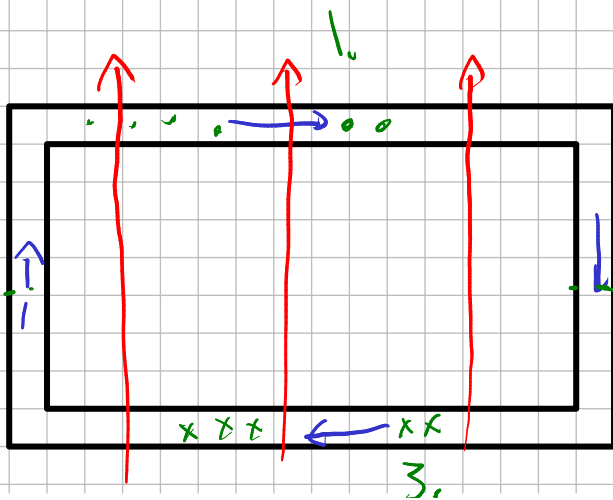
$$I l B = m g \sin \alpha$$

$$I = \frac{m g \sin \alpha}{l B} = \frac{160 \text{ kg} \cdot 9,81 \text{ m/s}^2 \cdot \sin 30^\circ}{2,0 \text{ m} \cdot 0,16 \text{ T}}$$

$$= \underline{\underline{2,5 \cdot 10^3 \text{ A}}}$$

$$G_x = G \sin \alpha$$

②



$$I \quad F_m \quad B$$

2

4.

Summen av kreftene på sløyfa fra magnetkraften er null fordi kreftene er like store og motsatt rettet.

Punkt 2 og 4 skaper ingen dreiemoment. Punkt 1 og 3 derimot skaper et dreiemoment.

$$\sum \vec{r} = I \alpha$$

$$\sum \vec{r} \times \vec{F} = I \alpha$$

$$\sum I b B \sin \alpha = I \alpha$$

↓

$$\underline{\underline{I a b B}}$$

$$\underline{\underline{a, \text{ og } B}}$$

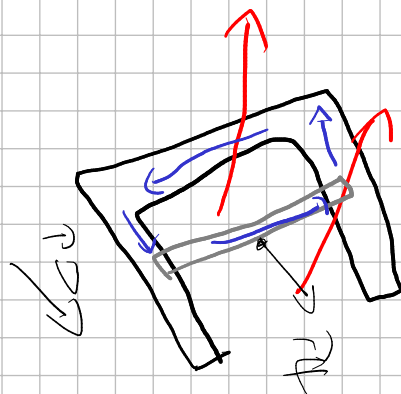
③

$$m, l, I, B$$

$$a) \sum F = m a$$

$$I l B = m a$$

$$a = \frac{I l B}{m}$$



$$b) \quad V^2 = 2as$$

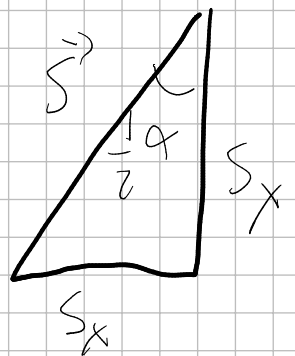
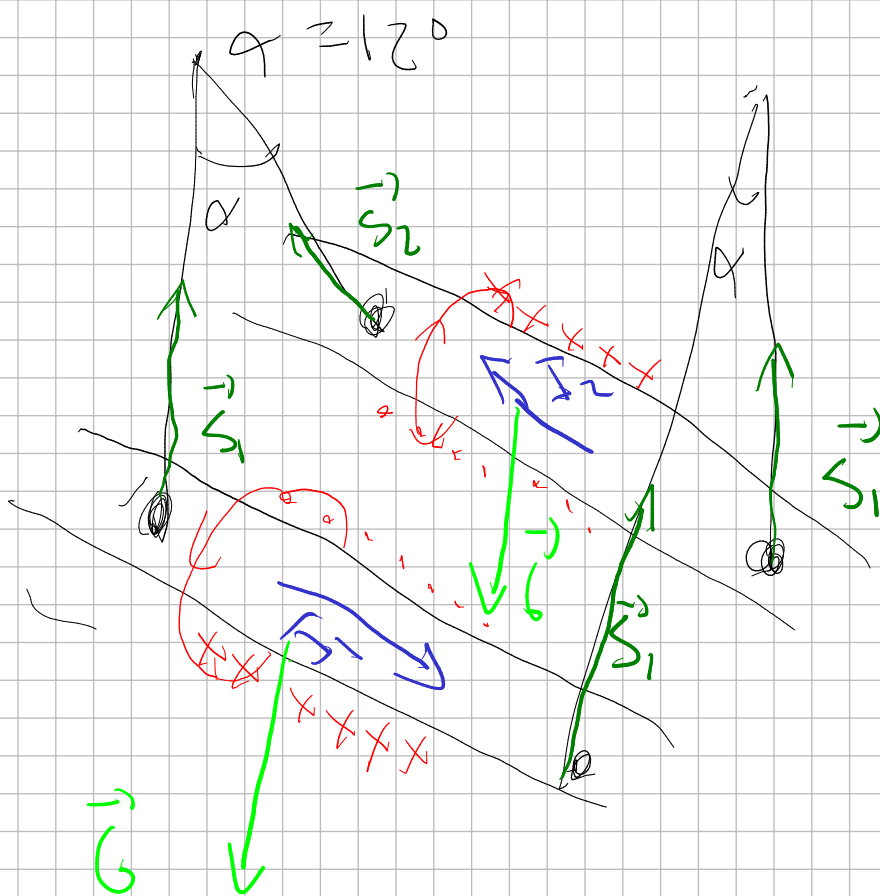
$$s = \frac{V^2}{2a} = \frac{V^2 m}{I \omega^2} = \underline{\underline{31 \cdot 10^6 \text{ m}}}$$

(4)

$$L = 510 \cdot 10^2 \text{ m}$$

$$\frac{M}{L} = 0.03 \frac{\text{kg}}{\text{m}}$$

$$I_1 = -I_2$$



$$\tan \alpha = \frac{S_y}{S_x}$$

$$S_y = \tan\left(\frac{1}{2}\alpha\right) S_x$$

Let:

$$\sum f_y = 0$$

$$G = S_y$$

$$S_y = mg$$

^

$$\sum f_x = 0$$

$$F_m = S_x$$

$$F_m = \tan\left(\frac{1}{2}\alpha\right) mg$$

/

$$I l B = \tan\left(\frac{1}{2}\alpha\right) m g$$



Vet ikke hvordan få m, l
bort ved $\frac{m}{L}$.

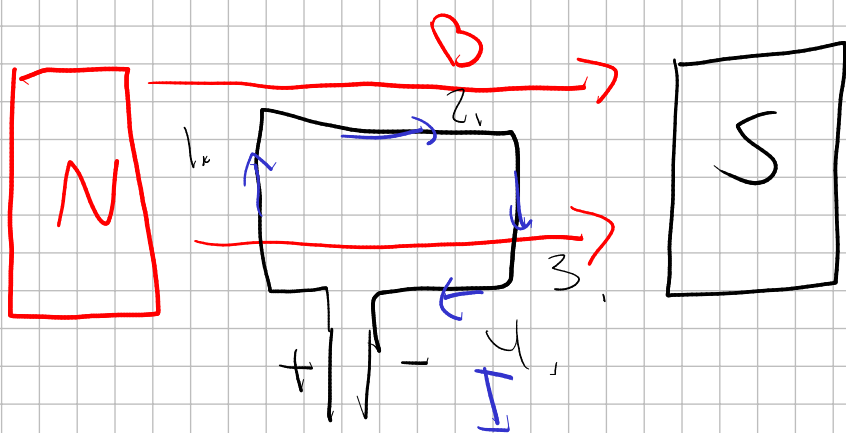
⑤

$$L = 0,1 \text{ m}$$

$$B = 0,5 \text{ T}$$

$$t = 0$$

$$I = 10 \text{ A}$$



$$a) F = I l B \sin \alpha$$

$\alpha = 90^\circ$ i tilfelle 1. og 3., og 0° i 2. og 4.

$$F = 10 \text{ A} \cdot 0,1 \text{ m} \cdot 0,5 \text{ T} = \underline{\underline{0,5 \text{ N i 1. og 3.}}}$$

b)

$$\vec{\tau} = \vec{r} \times \vec{F}$$

$$= Fr \sin \theta$$

$$= \underline{\underline{I B \omega \sin^2 \theta}}$$