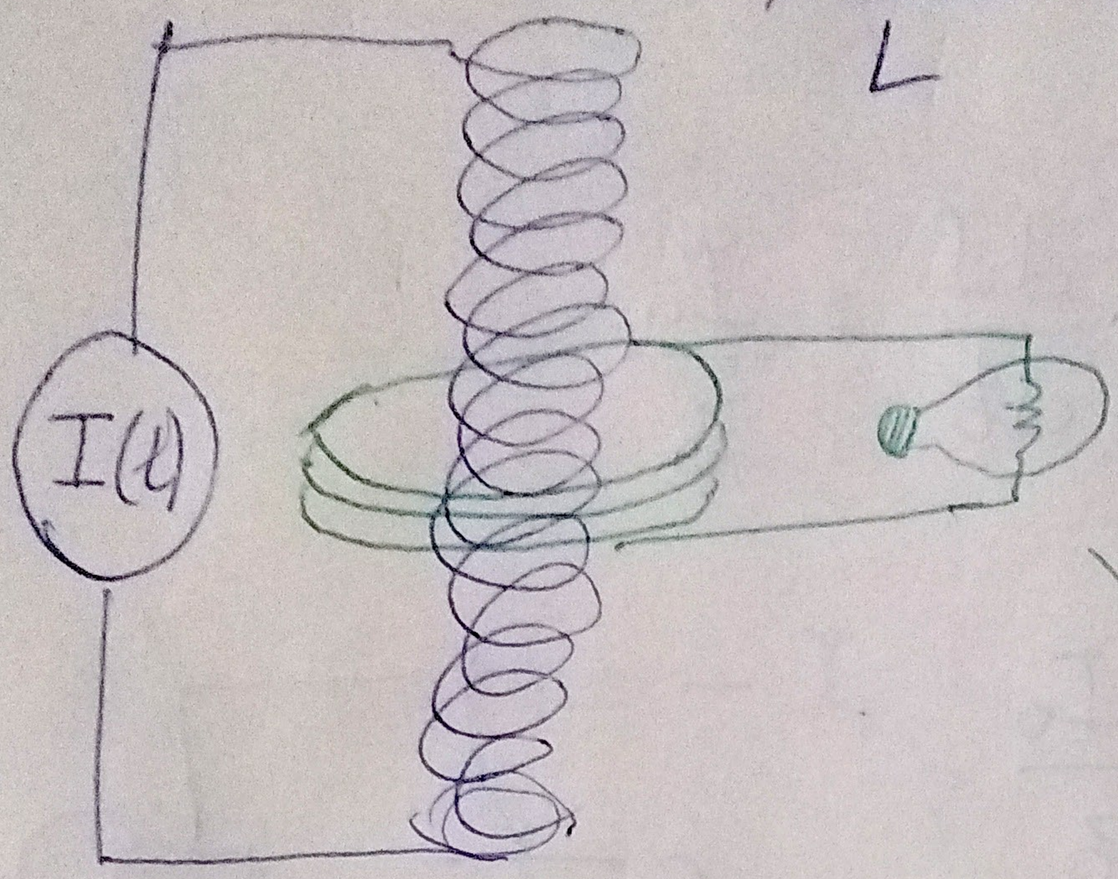
Ejercicio adicional:

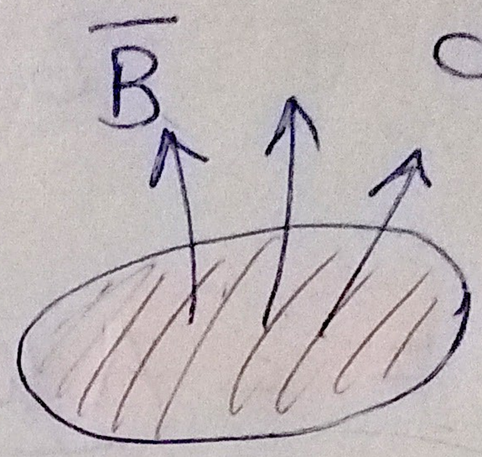
clase 7/10

$$\uparrow\uparrow \bar{B} = \frac{\mu_0 I N}{L} \hat{z}$$



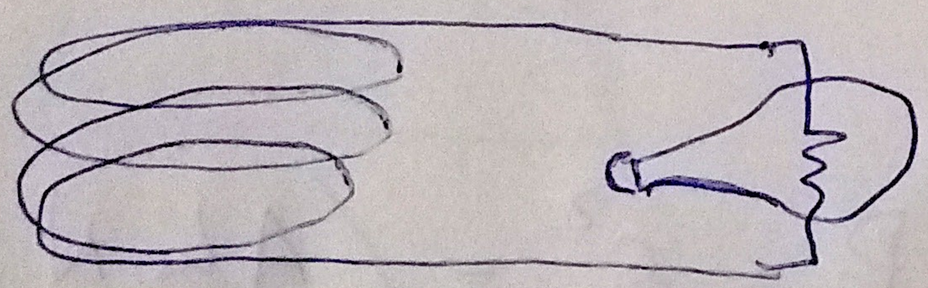
Faraday

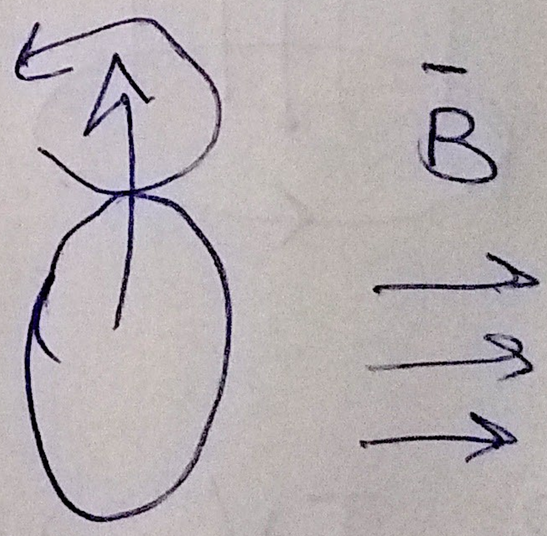
$$\mathcal{E} = -\frac{d\Phi_m}{dt}$$



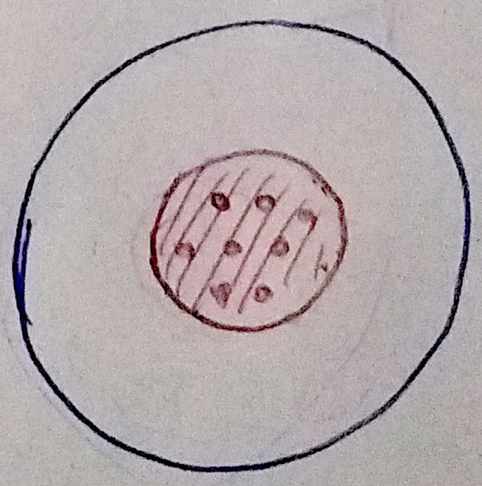
$$\Phi_m = \iint_S \bar{B} \cdot d\bar{A} \rightarrow \hat{n}$$

Secundario:





Calculo el flujo:



$$\Phi_m = MBA = \frac{\mu_0 N A}{L} I(t)$$

$$\iint \bar{B} \cdot d\bar{A}$$

$\hat{n}$

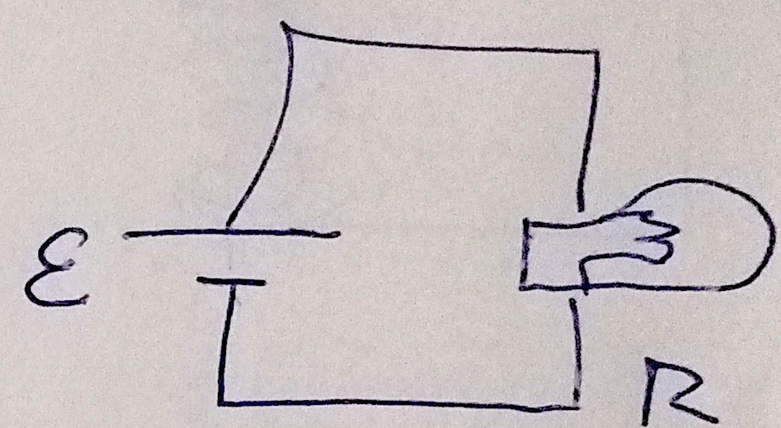
↓

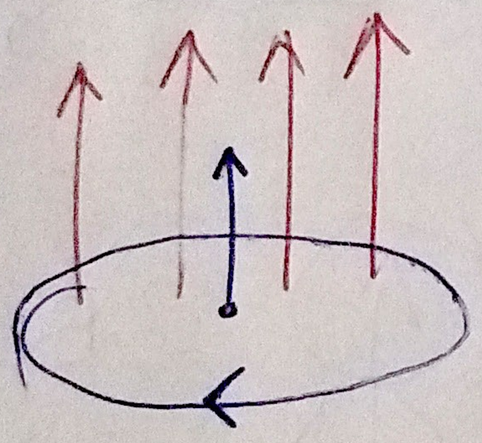
$\mathcal{E}_2$

$$\mathcal{E} = -\frac{d\Phi}{dt} = -\frac{A\mu_0 N}{L}\frac{dI}{dt}$$

a) $I(t) = I_0 \frac{t}{\tau} \rightarrow \frac{dI}{dt} = \frac{I_0}{\tau}$

$$\Rightarrow \mathcal{E} = -\frac{A\mu_0 N}{L}\frac{I_0}{\tau}$$





$$\iint \bar{B}\cdot d\bar{A}$$

$$I_s = \frac{\mathcal{E}}{R}$$

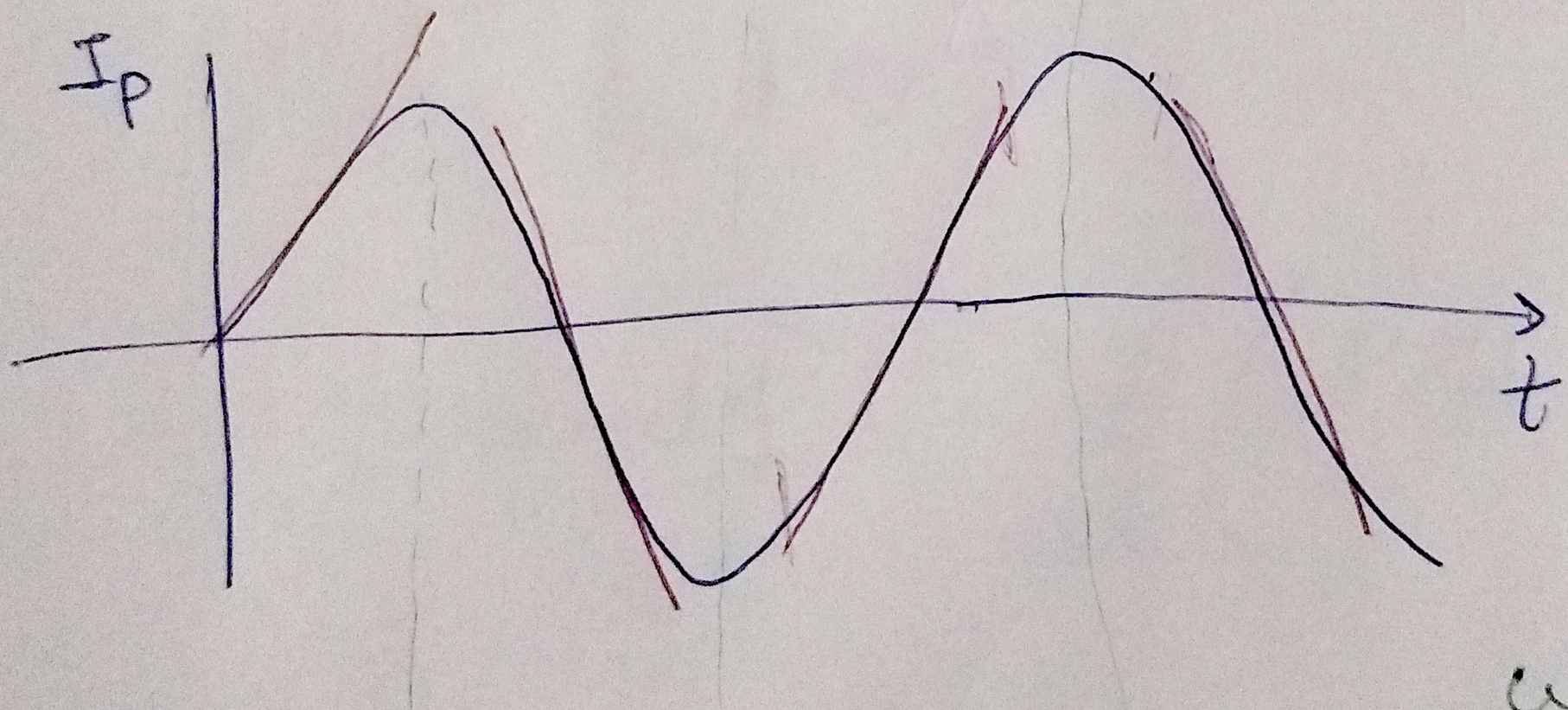
$$P = IV = \frac{V^2}{R} \rightarrow P_e = \frac{\mathcal{E}^2}{R} = \left(\frac{A\mu_0 N}{L}\frac{I_0}{\tau}\right)^2 \frac{1}{R}$$

$$\mathcal{E} = - \frac{MA\mu_0 N}{L} \frac{dI}{dt}$$

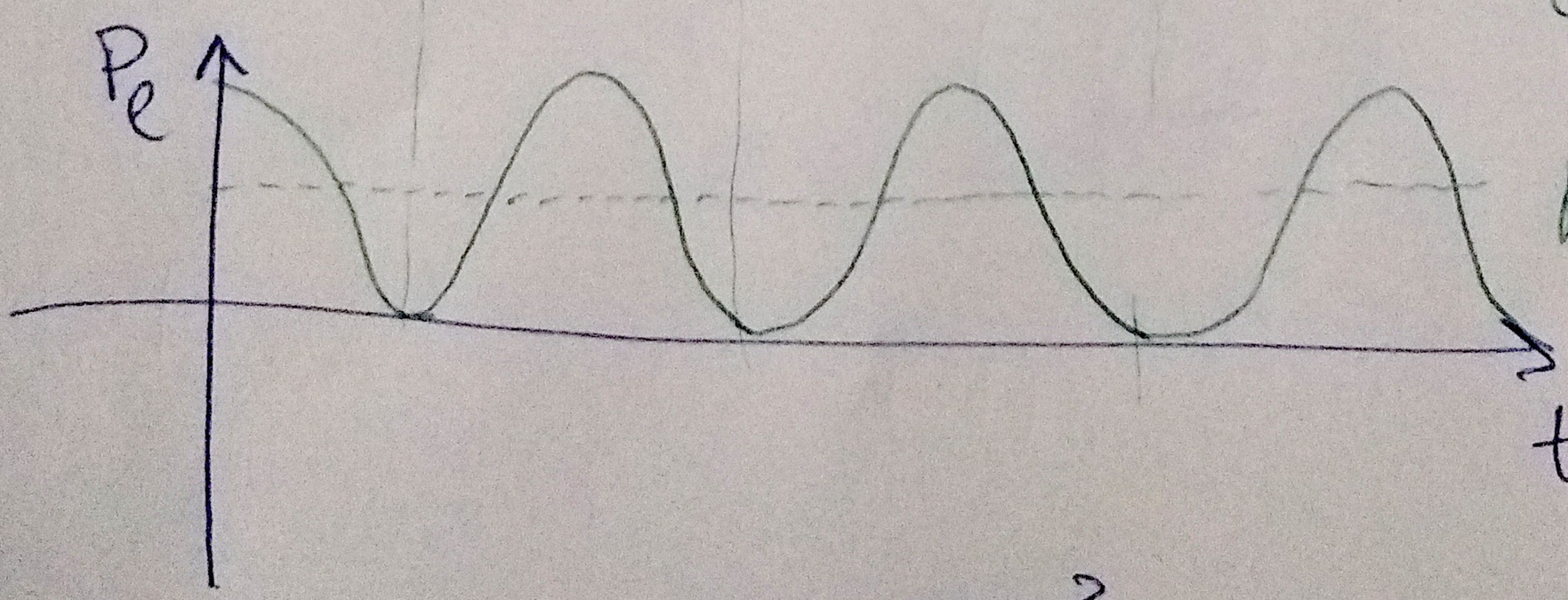
$$P_e = \left(\frac{MA\mu_0 N}{L} \frac{I_0}{\tau} \right)^2 R = \left(\frac{MA\mu_0 N}{L} \frac{dI}{dt} \right)^2 R$$

3) $I(t) = - I_0 \frac{t}{\tau}$

4) $I(t) = I_0 \operatorname{sen}(\omega t) \rightarrow \frac{dI}{dt} = I_0 \cos \omega t \omega$



$\omega = 50\ Hz$



$$\cos^2 x = \frac{\cos(2x) + 1}{2}$$