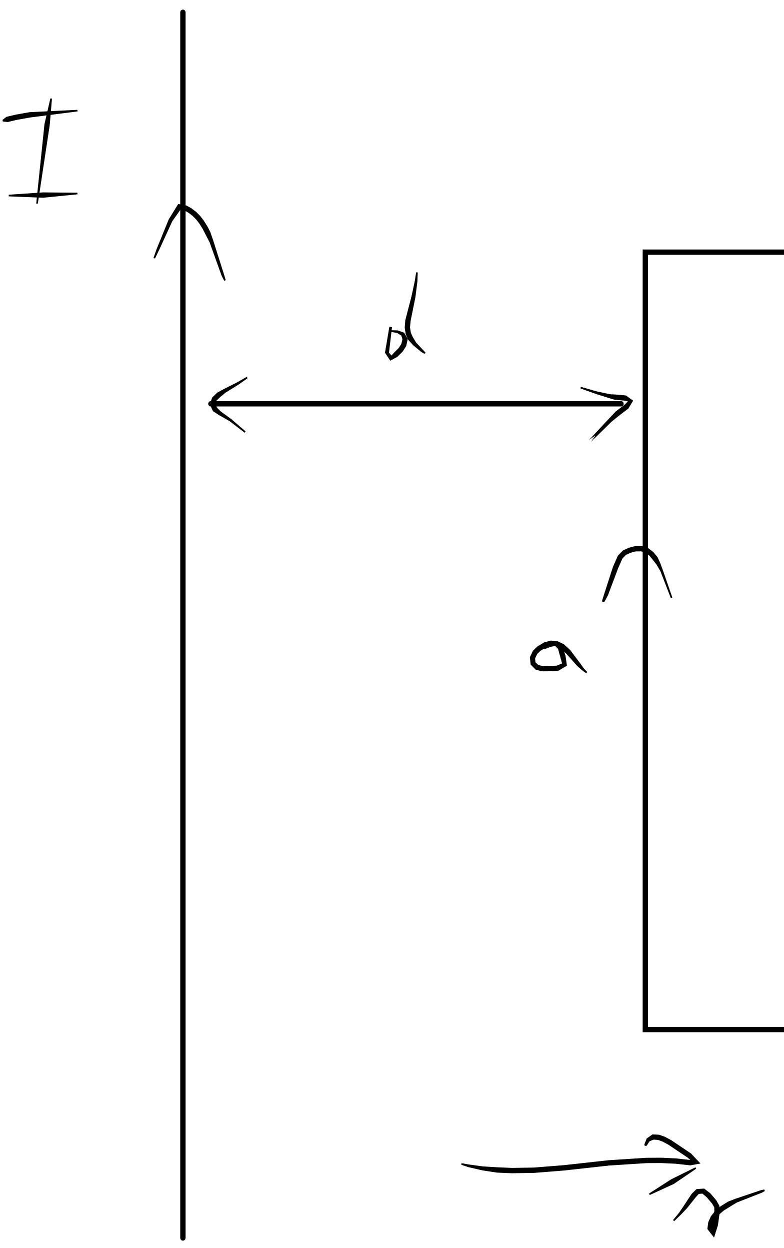


$$B = \frac{\mu_0 I}{2\pi r}$$

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

$$\Phi = \int_d^{d+a} \bar{B}(r)\, dS = \int_d^{d+a} \frac{\mu_0 I}{2\pi r}\, a\, dr =$$

$$= \frac{\mu_0 I a}{2\pi} \ln\left(\frac{d+a}{d}\right)$$

$$I_1 = \frac{\mathcal{E}}{R} = \frac{-1}{R}\frac{d\Phi}{dt}$$

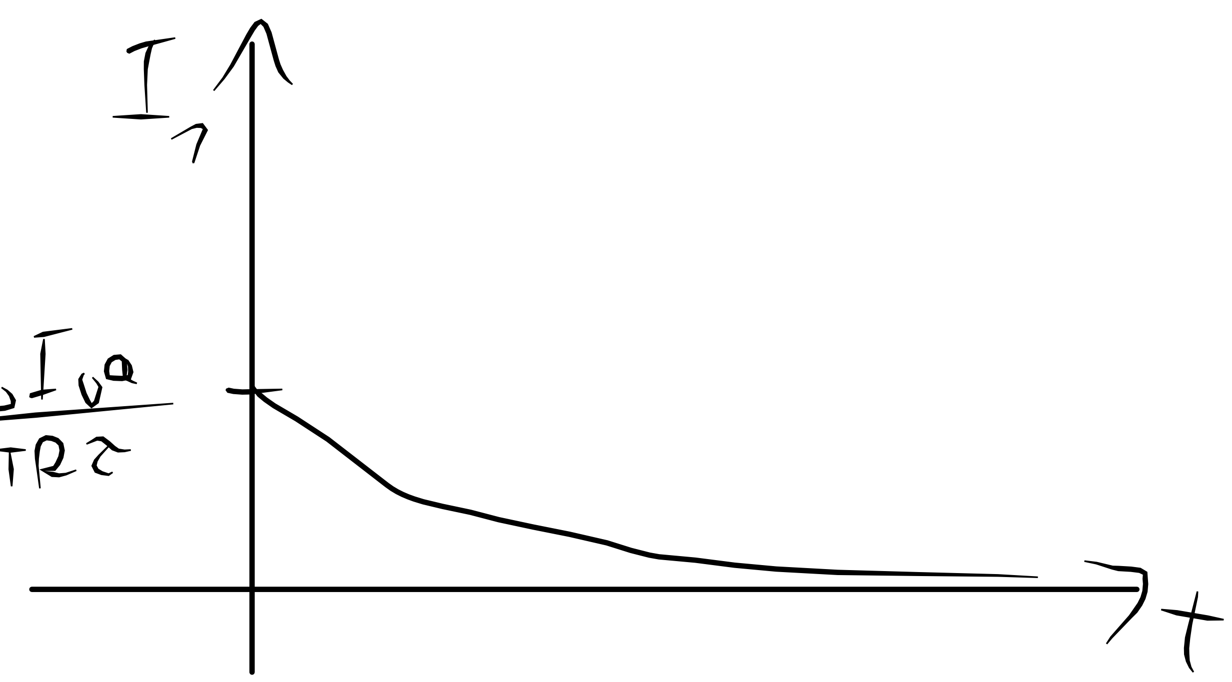
a) $I = I_0 e^{-\frac{t}{\tau}}$

$$I_1 = \frac{\mu_0 I_0 a}{2\pi R \tau} \ln\left(\frac{d+a}{d}\right) e^{-\frac{t}{\tau}}$$

$$Q = \int_0^\infty \frac{\mu_0 I_0 a}{2\pi R \tau} \ln\left(\frac{d+a}{d}\right) e^{-\frac{t}{\tau}}\, dt =$$

$$= \frac{\mu_0 I_0 a}{2\pi R} \ln\left(\frac{d+a}{d}\right)$$

$$\ln\left(\frac{d+a}{d}\right)\frac{\mu_0 I_0 a}{2\pi R \tau}$$



b) $I = \frac{-I_0}{T} t + I_0 \quad I(0) = I_0 \quad I(T) = 0$

$$I_1 = \frac{\mu_0 I_0 a}{2\pi R T} \ln\left(\frac{d+a}{d}\right)$$

$$Q = \int_0^T \frac{\mu_0 I_0 a}{2\pi R T} \ln\left(\frac{d+a}{d}\right) dt =$$

$$= \frac{\mu_0 I_0 a}{2\pi R} \ln\left(\frac{d+a}{d}\right)$$

$$\frac{\mu_0 I_0 a}{2\pi R T} \ln\left(\frac{d+a}{d}\right)$$