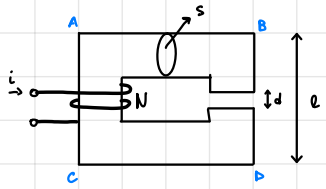
ESERCITAZIONE

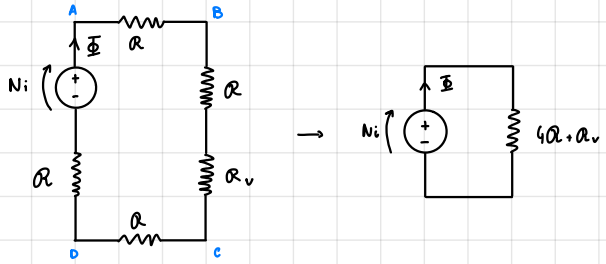
ESERCIZIO 1



$S, l, d \ll l, \mu_R, N$

L ?

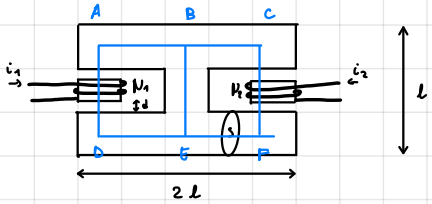
1) Circuito elettrico analogo



2) Calcoliamo il flusso: $\Phi = \frac{Ni}{R+R_v}$

3) Calcolo il flusso concatenato: $\Phi_c = N \cdot \Phi = \frac{N^2 i}{R+R_v} \rightarrow L = \frac{N^2}{R+R_v}$

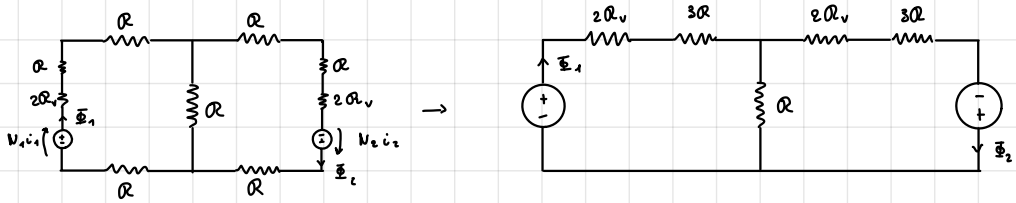
ESERCIZIO 4



$N_1, N_2, l, d \ll l, S$

μ

L ?



Calcolo i flussi con il principio di sovrapposizione degli effetti:

$$\begin{cases} \Phi_1 = \phi_1' + \phi_1'' \\ \Phi_2 = \phi_2' + \phi_2'' \end{cases} \longrightarrow \dots \longrightarrow \begin{matrix} \phi_1' = \frac{N_1}{R_{TOT}} i_1 & \phi_1'' = \frac{N_2}{R_{TOT}} i_2 \\ \phi_2' = \frac{N_1 R}{R_{TOT}(2R_v+4R)} i_1 & \phi_2'' = \frac{N_2 R}{R_{TOT}(2R_v+4R)} i_1 \end{matrix} \quad \text{simmetria}$$

$$R_{TOT} = (2R_v + 3R) \,//\, R \,//\, (2R_v + 3R)$$

$$\rightarrow \quad \underline{L} = \begin{bmatrix} \frac{N_1^2}{R_{TOT}} & \frac{N_1 N_2 R}{R_{TOT}(2R_v+4R)} \\ \frac{N_1 N_2 R}{R_{TOT}(2R_v+4R)} & \frac{N_2^2}{R_{TOT}} \end{bmatrix}$$