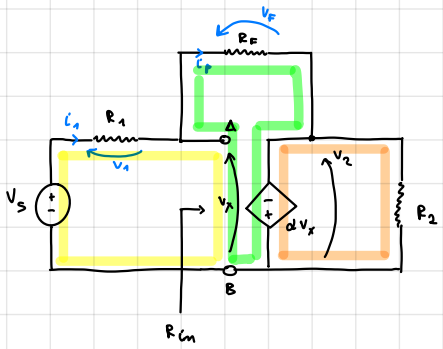
ESERCITAZIONE

ES. 1



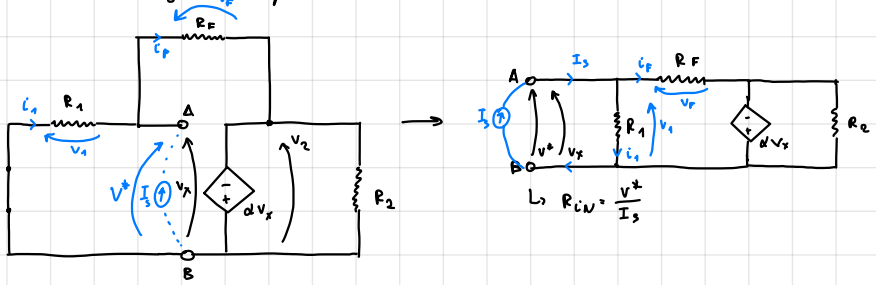
$\alpha = 200$ $\quad V_s = 10\,mV$

$R_1 = R_2 = 1\,K\Omega$

$R_F = 50\,K\Omega$

- $V_s = v_1 + v_x = R_1 i_1 + v_x \rightarrow i_1 = \frac{V_s - v_x}{R_1}$
- $v_x = v_F + v_2 = R_F i_F - \alpha v_x \rightarrow v_x = \frac{R_F}{1+\alpha} \cdot \frac{V_s - v_x}{R_1} \rightarrow v_x = \frac{R_F}{R_1} \cdot \frac{1}{1+\alpha+\frac{R_F}{R_1}} = 1{,}99\,mV$
- $\alpha v_x = -v_2 \rightarrow v_2 = -0{,}398\,V$
  - $\frac{v_2}{v_x} = -\alpha = -200$

Spegniamo tutte le sorgenti indipendenti e iniettiamo una corrente nota in A-B



$KCL_A = \quad I_s = i_F + i_1 = \frac{v_F}{R_F} + \frac{v_1}{R_1} = \frac{V^* + \alpha v_x}{R_F} + \frac{V^*}{R_1} = \dots = \left[\frac{R_1(1+\alpha) + R_F}{R_1 R_F}\right] \cdot V^* \quad \Rightarrow \quad R_{in} = \dots \; 199\,\Omega$