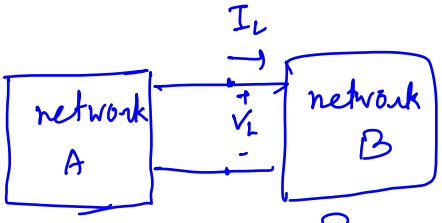
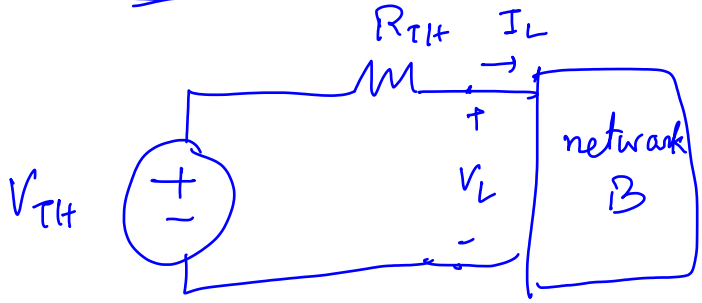
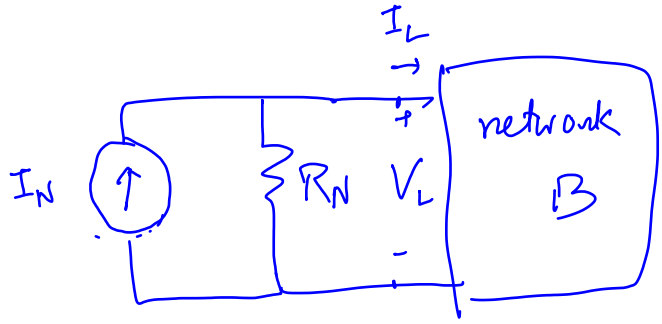
Quick Recap

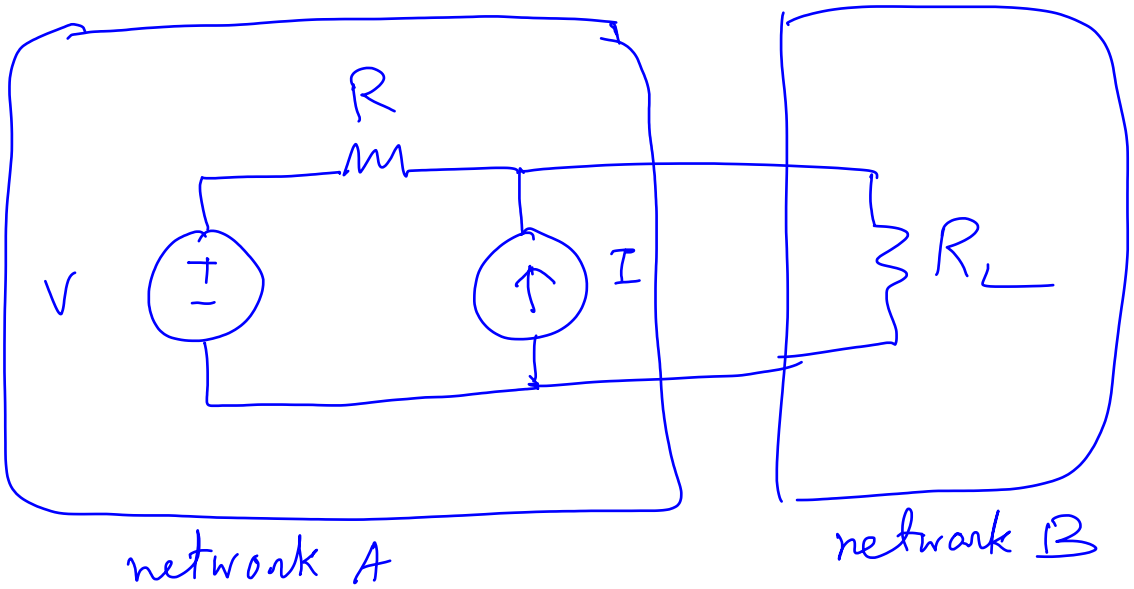


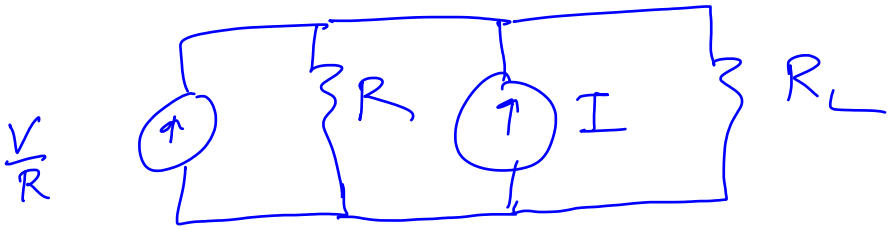


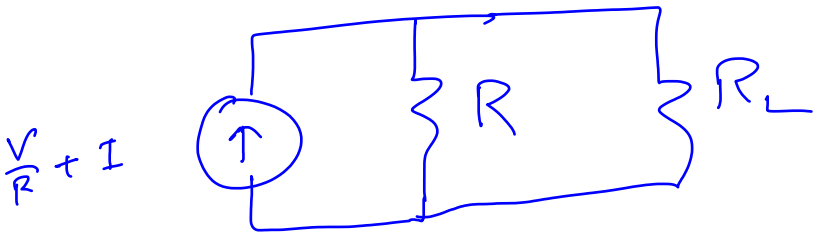


$V_{TH} = I_N R_{TH}$

$R_N = R_{TH}$

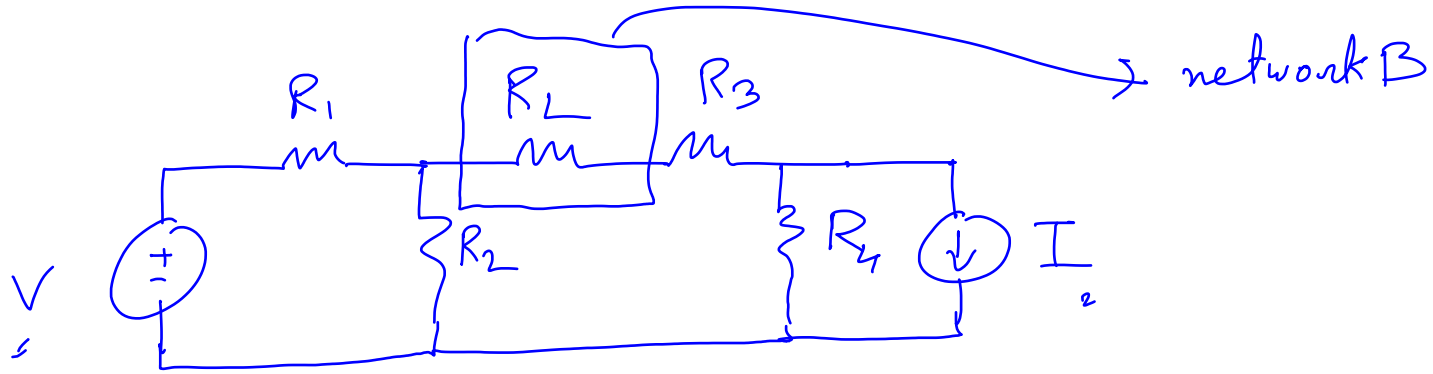




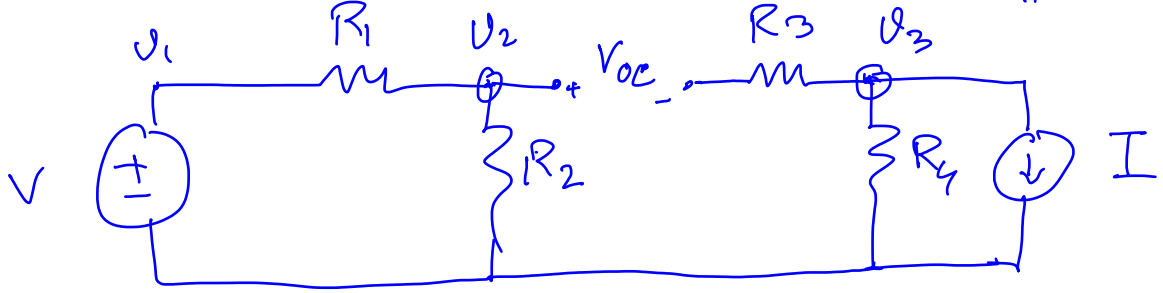


$$I_N = \frac{V}{R} + I$$

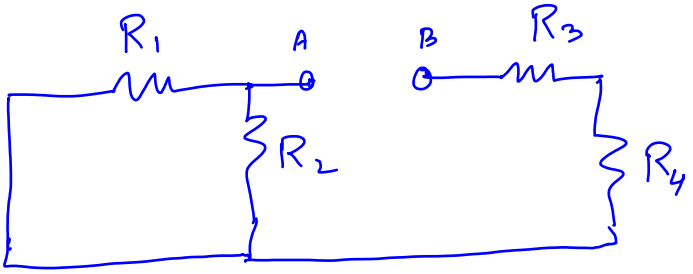
$$R_N = R$$



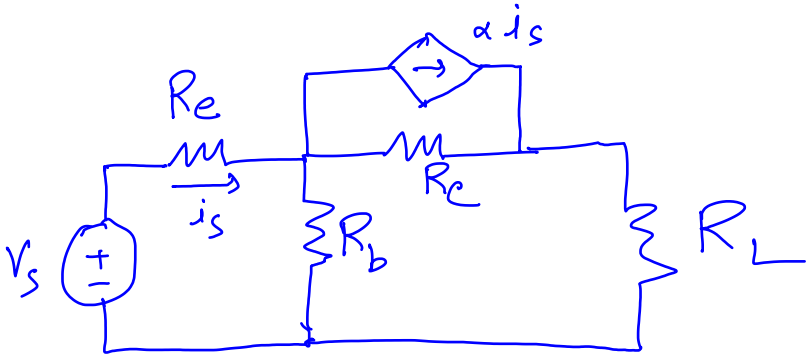
$$V_{TH} = V_{OC} = v_2 - v_3$$

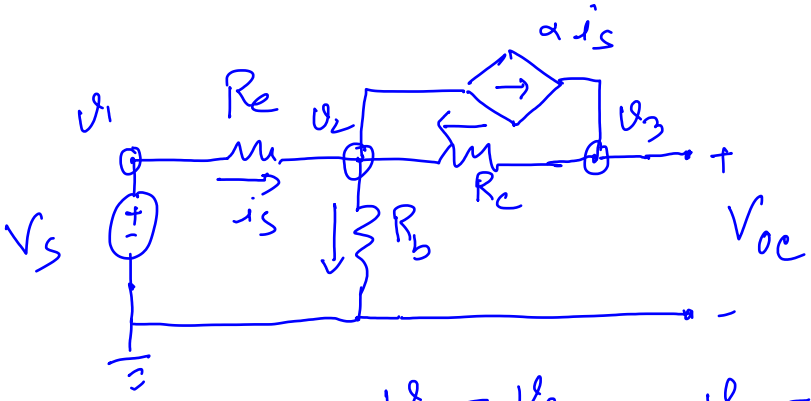


$$R_{TH} = (R_1 \,||\, R_2) + R_3 + R_4$$



R_{AB}



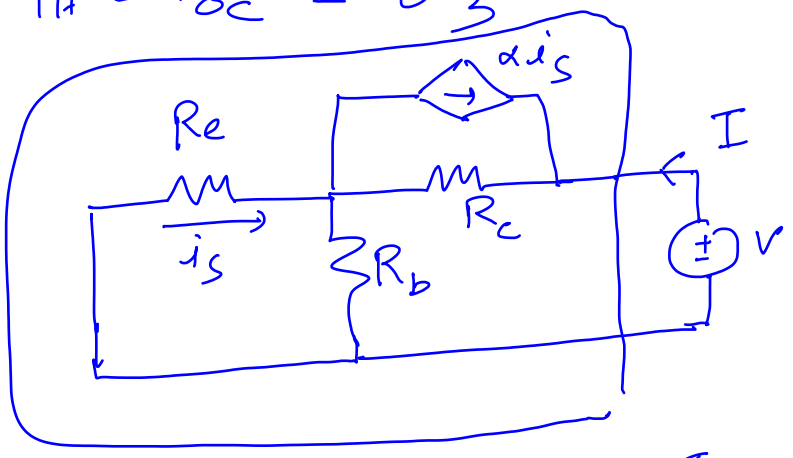


$$v_1 = V_s$$

$$\frac{v_1 - v_2}{R_e} + \frac{v_3 - v_2}{R_c} = \frac{v_2}{R_b} + \alpha\left(\frac{v_1 - v_2}{R_e}\right)$$

$$\frac{v_3 - v_2}{R_c} = \alpha\left(\frac{v_1 - v_2}{R_e}\right)$$

$$V_{TH} = V_{oc} = v_3$$



$$R_{TH} = \frac{V}{I}$$