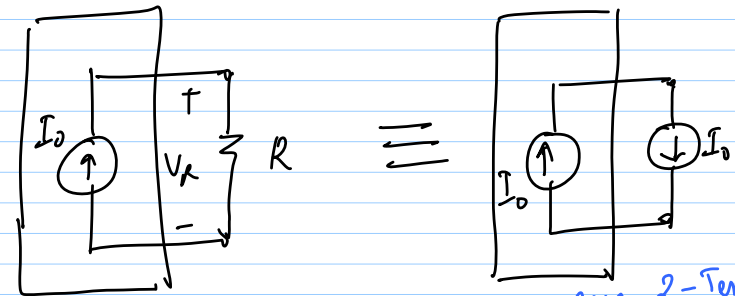
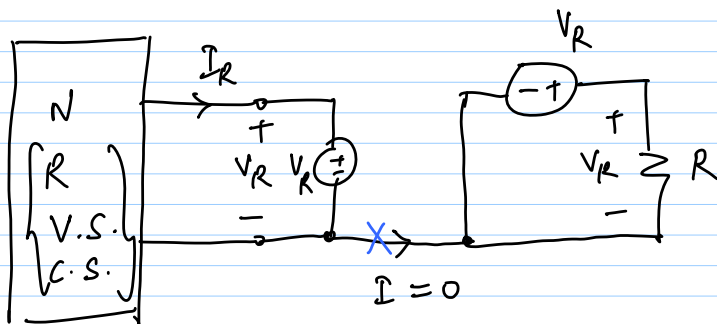
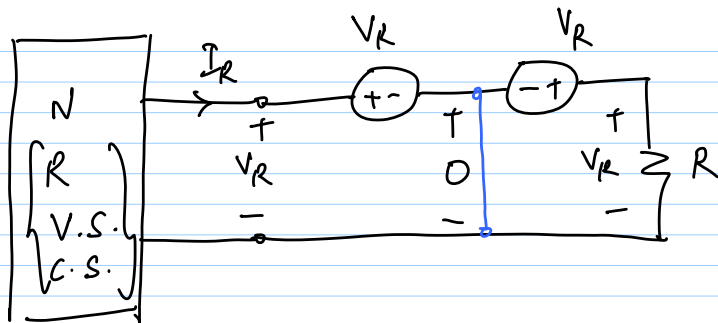
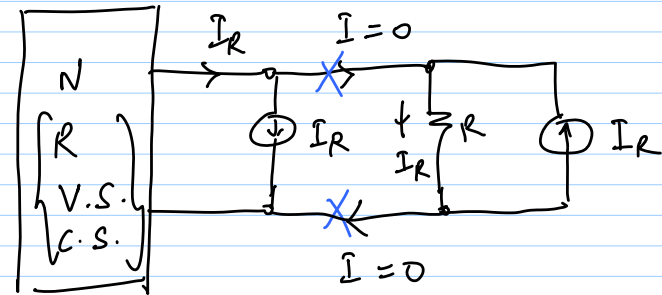
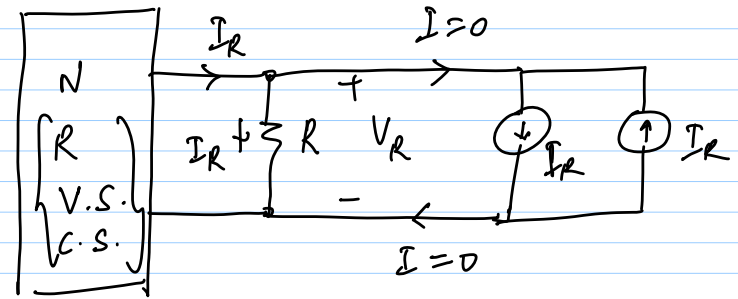
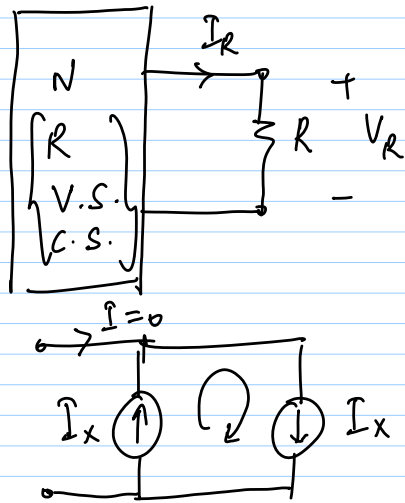


3-2-15

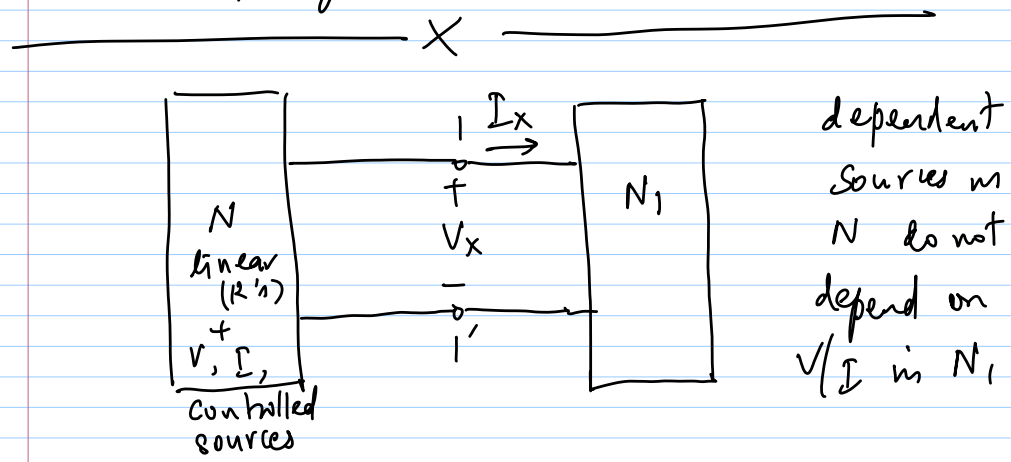
Lec 11

Substitution Theorem

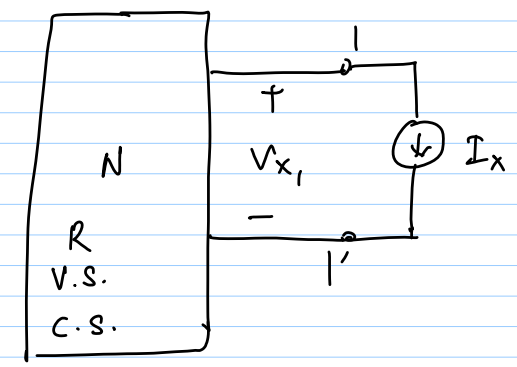


* Any resistance R with voltage V_R across it and current I_R through it can be replaced by a voltage or current source of value V_R or I_R respectively without changing the network

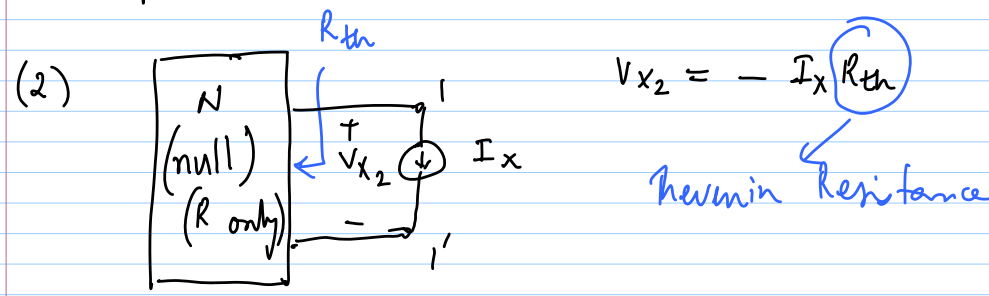
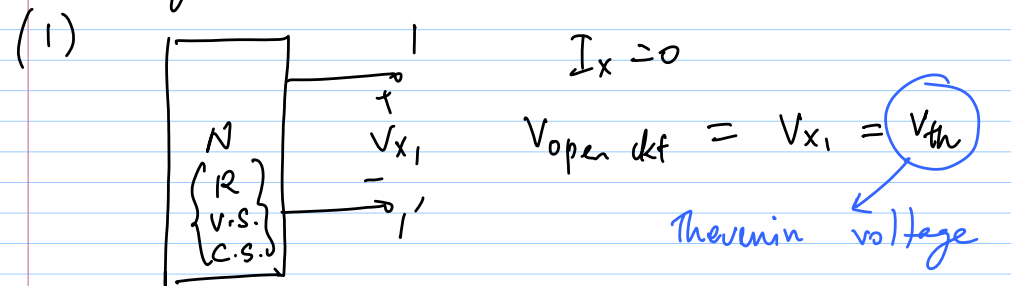
A voltage/current source can be replaced by a resistor as long as it is dissipating power.



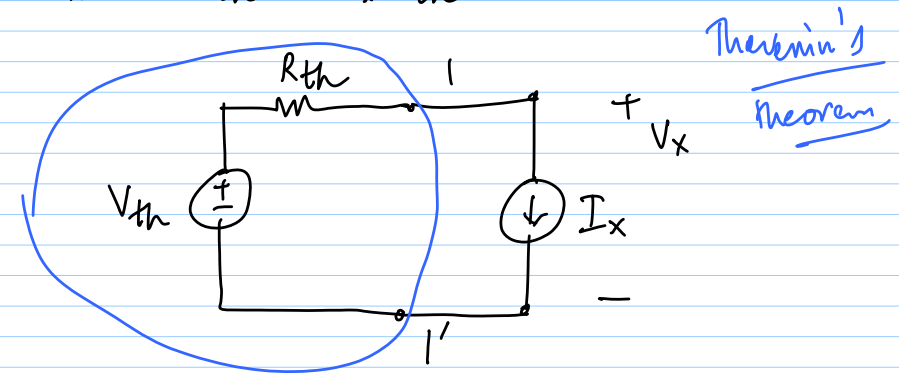
What can I replace N with so that state of N_1 does not change?



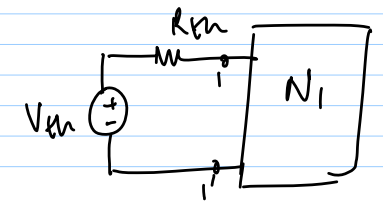
Apply superposition

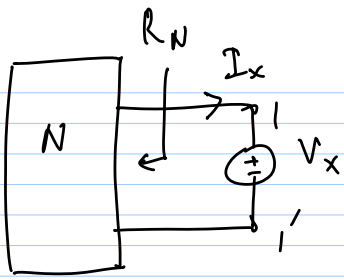


$$V_x = V_{th} - I_x R_{th}$$

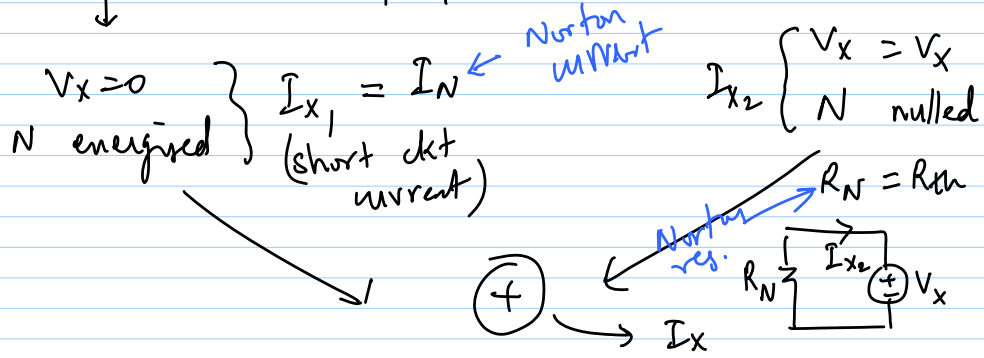


Thevenin eq. of N



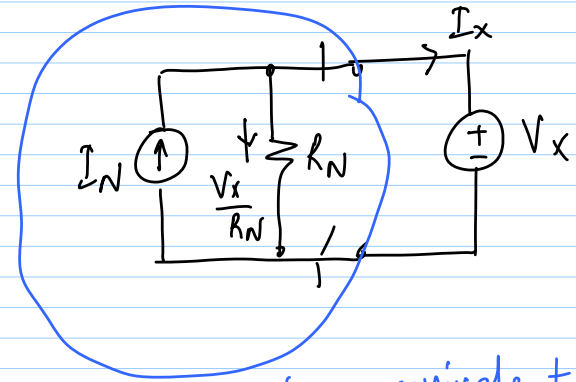


Superposition



$$I_x = I_N - \frac{V_x}{R_N}$$

$$R_{th} = R_N$$



Norton equivalent circuit

$$V_{th} = I_N R_N$$