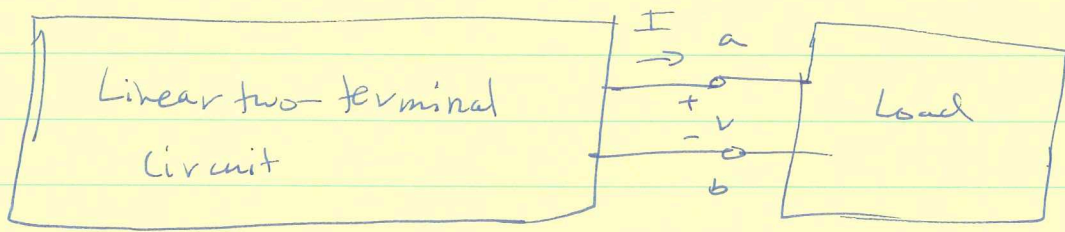


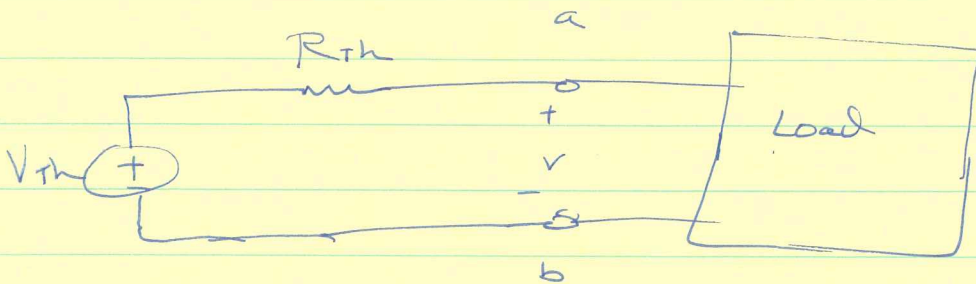
~~Correction~~
~~active pp. 139-152~~ ①

Thevenin Theorem

Th 4th week



Equivalent to



V_{Th} is open circuit voltage at terminals

R_{Th} is input resistance when all independent sources turned off.

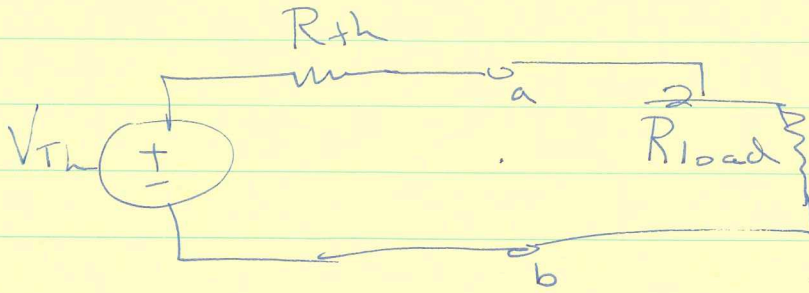
OR V_{Th} / short circuited output current.

New concepts

Load

Input resistance

Load

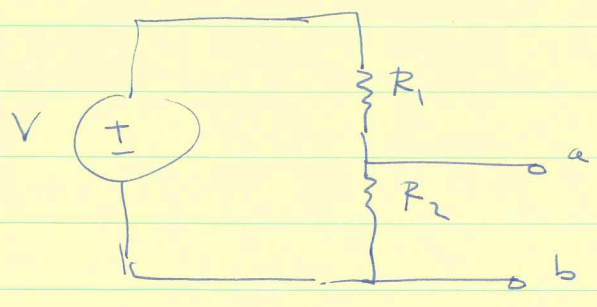


$$V_{ab} = V_{Th} \quad \text{if} \quad R_{load} \gg R_{Th}$$

If $R_{load} \approx R_{Th}$ or less, it lowers V_{ab} .

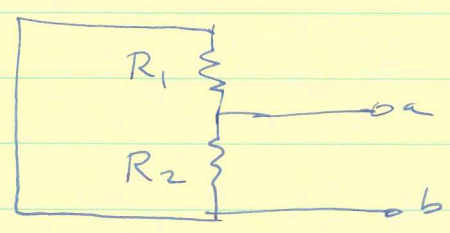
We say the circuit is "loaded down".

Example

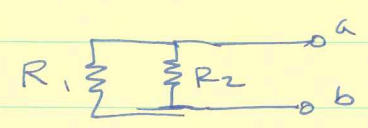


$$V_{Th} = V \frac{R_2}{R_1 + R_2}$$

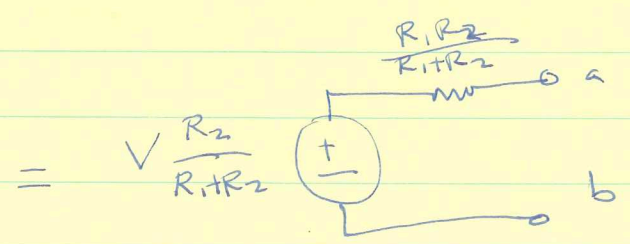
To Find R_{Th}



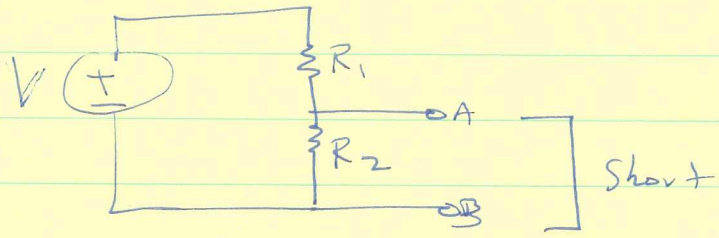
$$\Rightarrow \underline{R_{Th} =}$$



$$\Rightarrow R_{Th} = R_1 \parallel R_2 = \frac{R_1 R_2}{R_1 + R_2}$$



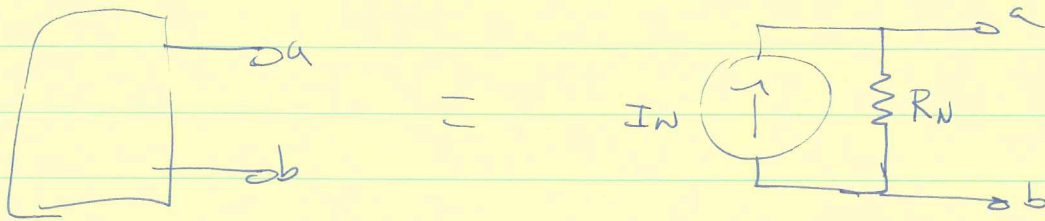
OR



$$i = \frac{V}{R_1}$$

$$\Rightarrow R_{th} = \frac{V \frac{R_2}{R_1 + R_2}}{\frac{V}{R_1}} = \frac{R_1 R_2}{R_1 + R_2}$$

Norton

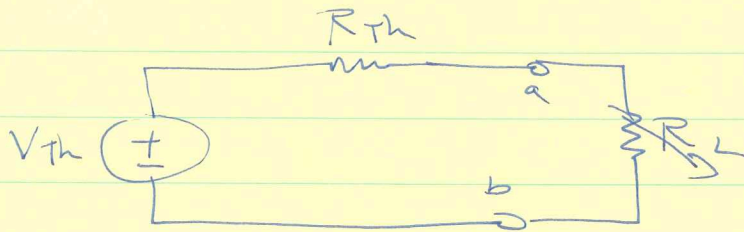


Where

$$R_N = R_{th}$$

$$I_N = V_{th} / R_{th}$$

Power



arrow means
 R_L variable

Power delivered to load:

$$P = i^2 R_L = \left(\frac{V_{Th}}{R_{Th} + R_L} \right)^2 R_L$$

