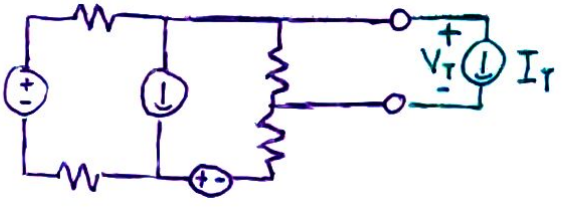
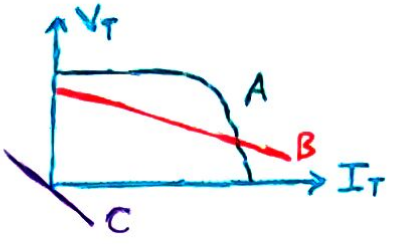
EECS 16A ## 10.22 LECTURE 15 ##

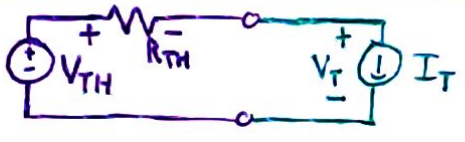


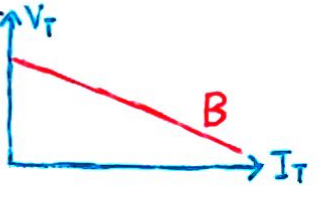


Ideal V_s cannot produce A, as it isn't a battery and constantly produces the same V. The relationship between V & I must be linear, as given by $A\vec{v}_n = \vec{b} \rightarrow \vec{v}_n = A^{-1}\vec{b}$, as shown in B or C. The latter, however, only occurs with no V_s present.

Of the given IV curves, only curve B may depict the circuit.

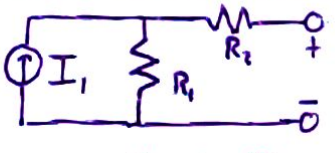
THÉVENIN EQUIVALENT CIRCUIT





$V_{OC} = V_{TH}$
$I_{SC} = V_{TH}/R_{TH}$

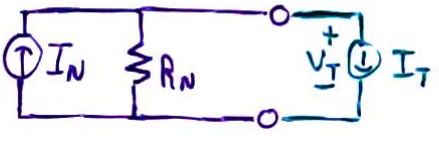
NORTON EQUIVALENT CIRCUIT



$V_{OC} = R_1 I_1$
$I_{SC} = I_1 \frac{R_1}{R_1 + R_2}$

$V_{TH} = R_1 I_1$
$R_{TH} = V_{TH}/I_{SC}$
$= R_1 + R_2$

Realize that the above circuits have the same IV curves



$V_{OC} = I_N R_N$
$I_{SC} = I_N$
} convert to Thevenin {
$V_{TH} = I_N R_N$
$R_{TH} = V_{TH}/I_N = R_N$

these 2 circuits (T, N) are equivalent!

CIRCUIT ANALYSIS SUMMARY

- KVL, KCL — Basics
- Ohm's Law — Basics
- Node Voltage Analysis — Universal Procedure
- Equivalence — Universal Procedure
- Superposition — Universal Procedure