Lecture 4, Monday, January 24, 2022

- Circuit analysis
  - Resistors in series and voltage division

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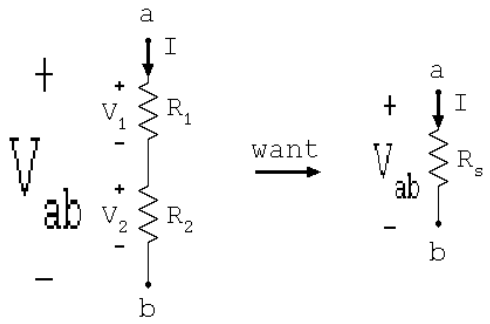

* $R_s = R_1 + R_2$

  If n resistors in series: $R_s = R_1 + R_2 + \cdots + R_n$

* $V_{R_i} = \frac{R_i}{R_s} V_{ab}$

  Voltage in each resistor is proportional to own resistance

  The larger the resistance, the larger portion of V_{ab} it gets

  - Resistors in parallel and current division division

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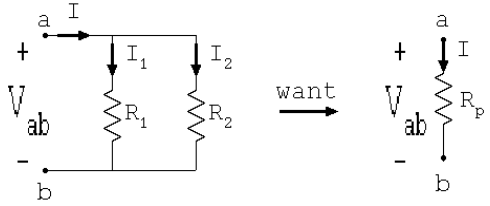

* $R_p = \frac{R_1 R_2}{R_1 + R_2}$

  If n resistors in parallel: $\frac{1}{R_P} = \frac{1}{R_1} + \frac{1}{R_2} + \cdots + \frac{1}{R_n}$

* $I_{R_i} = \frac{R_p}{R_i} I$

  Current in resistor is inversely proportional to own resistance

  The smaller the resistance, the larger portion of I it gets

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– Source combinations

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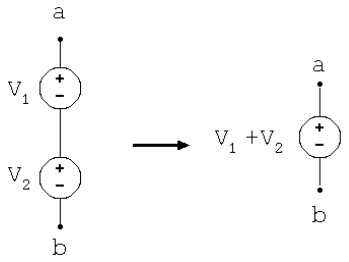
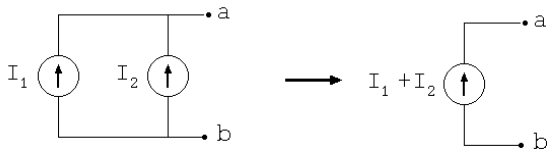
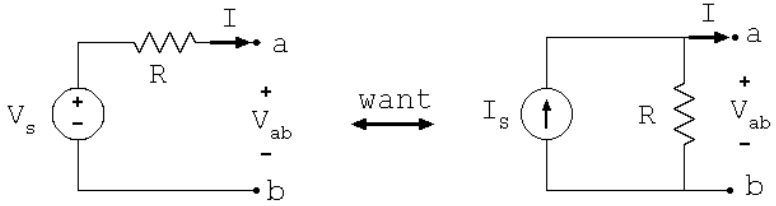




* Voltage sources in series add/subtract
* Current sources in parallel add/subtract

- Source transformations



* $V_s = RI_s$
* Pay attention to series/parallel
* Avoid transforming parts of circuit where:
  * dependency exists
  * we are solving for.

