

Linear Circuits

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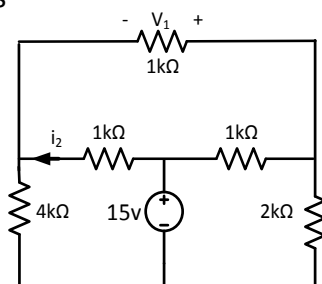


Module 2

Lesson 1: Overview and Kirchhoff's Voltage Law

Module Overview

- Analyze resistive circuits to determine currents and voltages

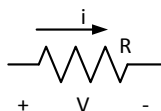


- Learn about physical applications including resistive sensors

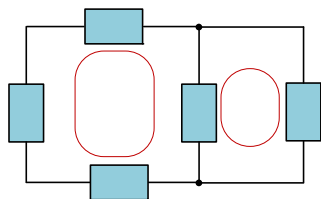
Kirchhoff's Voltage Law

Builds Upon:

- Ohm's Law ($V=iR$)



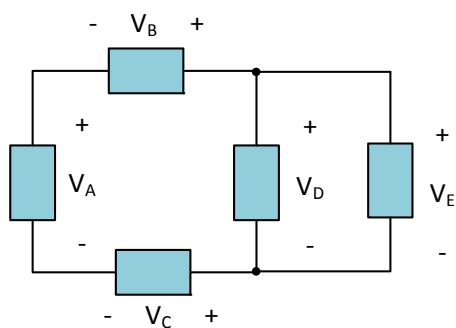
- Loops



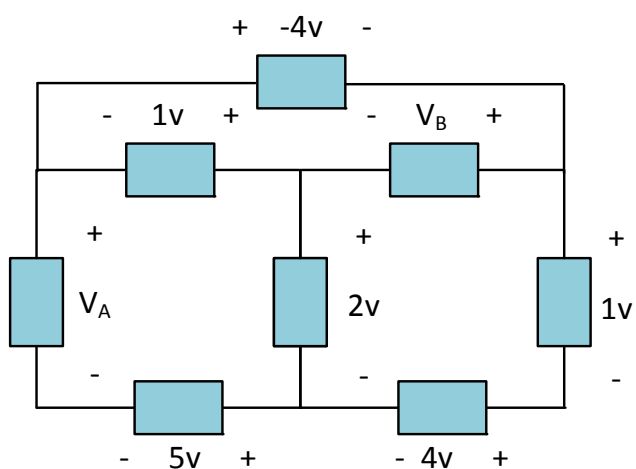
Kirchhoff's Voltage Law (KVL)

Sum of the voltages around any loop = zero

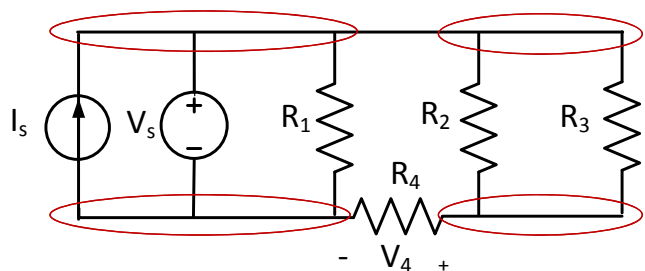
$$\sum V_{\text{loop}} = 0$$



KVL Example and Quiz

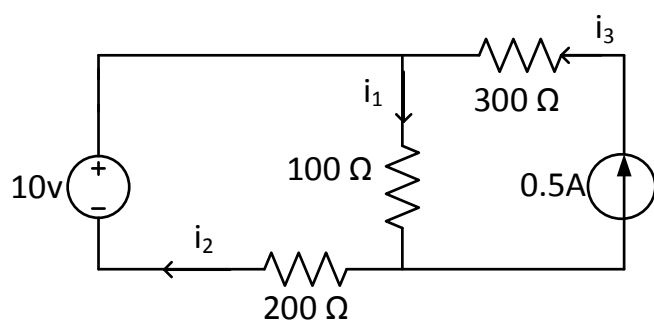


KVL Example with Parallel Components

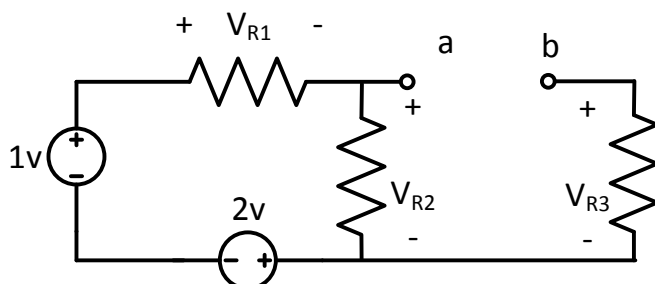


Voltages across parallel elements are equal.

KVL Example (with Current Source)

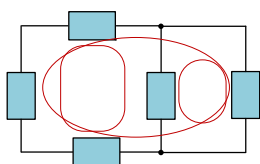


KVL Example with Open Loop



Key Concepts

- KVL: $\sum V_{\text{loop}} = 0$



- Special Cases to Remember

- Parallel components have same voltage
- Current source does not have zero voltage
- KVL holds around open loop

