ECE 203

Circuits I

Kirchoff's Laws

Lecture 2-2

Some Definitions

1) Node- A point of connection between any two or more circuit elements

2) Loop- A closed path through a circuit, but only traversing any given node once

3) Branch- a part of a circuit containing one circuit element

Go to example 2-2.1

Kirchoff's Current Law

The sum of all currents entering a node equals zero.

Basically a statement of conservation of charge.

So, put another way, whatever current enters a node also has to leave the node.

Kirchoff's Current Law = KCL

- A very powerful analytic tool for studying circuits

- For some examples, go to Example 2-2.2

Kirchoff's Voltage Law = KVL

- The sum of the voltages around any loop is zero

- A manifestation of energy conservation

- For some examples for to Example 2-2.3

Voltage Notation

Some examples of how voltages are denoted in circuit diagrams

$$V_x = V_{ab}$$

$$V_x = V_o$$

$$V_x = V_o$$