Review

Maxwell's equations simplify to algebraic KVL and KCL under LMD!

KVL:

$$\sum_j v_j = 0$$

loop

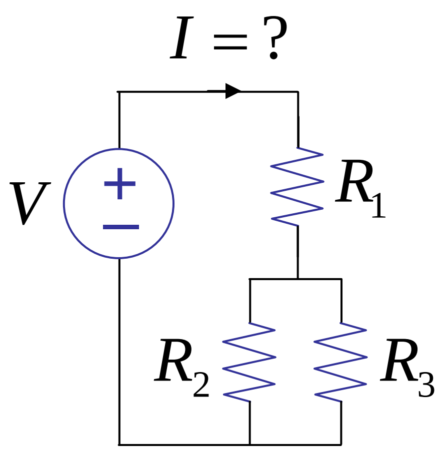
KCL:

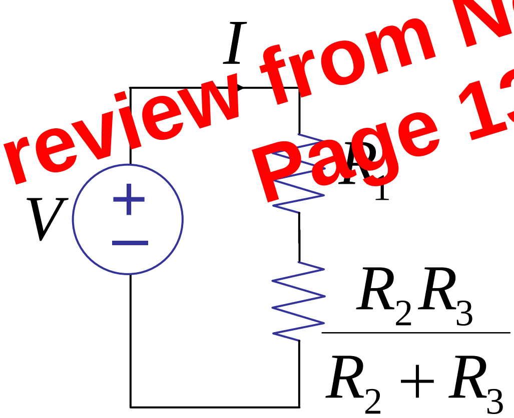
$$\sum_j i_j = 0$$

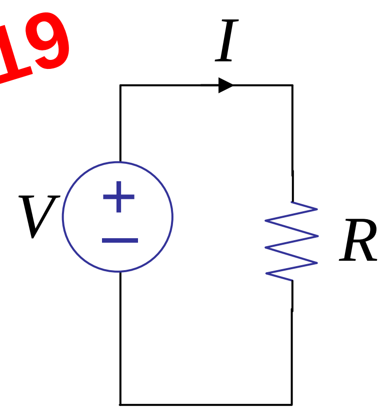
node

Other Analysis Methods
Method 2— Apply element combination rules

Example







$$R = R_1 + \frac{R_2 R_3}{R_2 + R_3}$$

$$I = \frac{V}{R}$$

Method 3—Node analysis
Particular application of KVL, KCL method

1. Select reference node (⊥ ground) from which voltages are measured.

2. Label voltages of remaining nodes with respect to ground. These are the primary unknowns.

3. Write KCL for all but the ground node, substituting device laws and KVL.

4. Solve for node voltages.

5. Back solve for branch voltages and currents (i.e., the secondary unknowns)