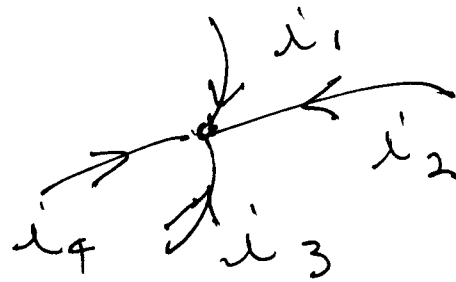


# Two "Laws" of Circuit Analysis (and Synthesis)

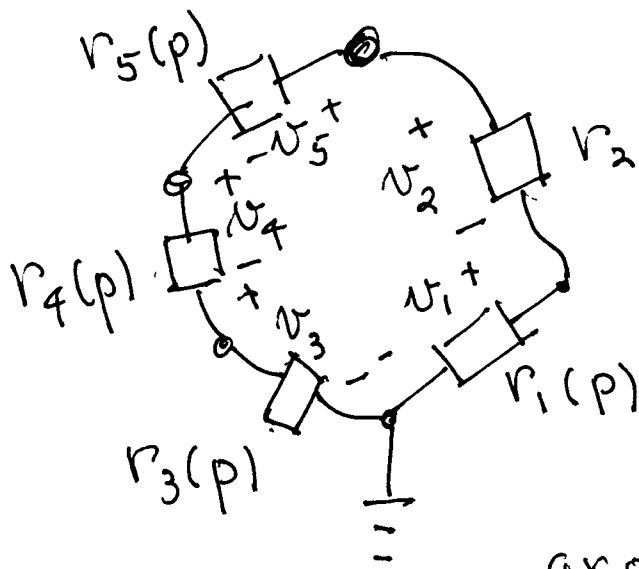
① Charge Conservation



$$i_1 + i_2 + i_3 + i_4 = 0$$

Node cannot store charge

② Voltage at a node is unique (If one takes two different paths the same answer will result)



so  $v_1 + v_2 = v_3 + v_4 + v_5$

or  $v_1 + v_2 - v_3 - v_4 - v_5 = 0$

so sum of voltage around a loop must be 0

The along with Branch Relations are the machinery use to solve for circuits v's and