Circuits Process Guidesheet

Topic

Kirchhoff's Laws

Governing Equations and Assumptions

KVL

KCL

$v = iR$

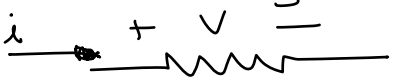
$p = vi$

$p_{resistor} = i^2 R = \frac{v^2}{R}$

Process

① Label all voltages and currents

Resistor => Passive Sign Convention



② Select Loops and/or nodes

=> Isolate unKnowns if possible

③ Apply KVL and/or KCL

KVL => Select CW or CCW

'+' to '−' => positive voltage

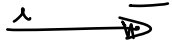
'−' to '+' => negative voltage

KCL => Towards the node => negative current

Away from the node => Positive current

④ Determine the power

=> $p = vi$



=> $p = -vi$

$p > 0$ => Absorbed

$p < 0$ => Developed