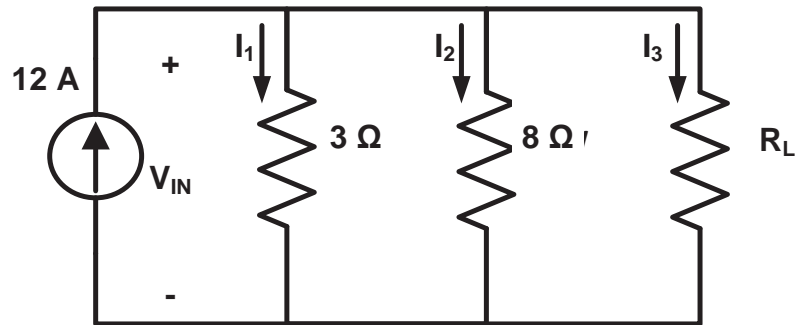


Example 3. OHM'S LAW

I_2 is 3 Amps.

Find I_1 , I_3 and R_L , V_{IN} and the power in the dissipated in R_L



$$I_2 = 3A$$

$$V_2 = I_2 R_{8\Omega} = (3)(8) = 24V$$

$$V_{in} = V_1 = V_2 = V_3$$

$$I_1 = \frac{V_1}{R_{3\Omega}} = \frac{24}{3} = 8A$$

KCL yields

$$I_{IN} = I_1 + I_2 + I_3$$

$$I_3 = I_{IN} - I_1 - I_2 = 12 - 8 - 3 = 1A$$

Ohm's Law @ R_L

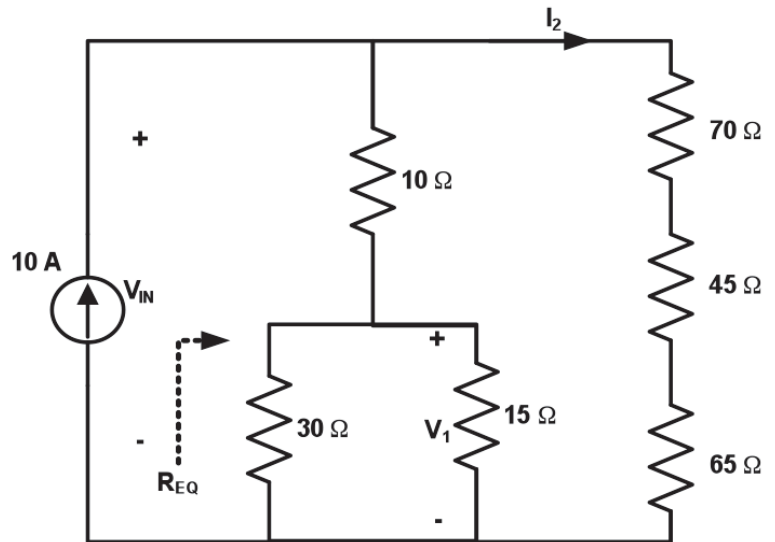
$$R_L = \frac{V_3}{I_3} = \frac{24}{1} = 24\Omega$$

$$I_3 = 1A$$

$$P_L = V_3 I_3 = I_3^2 R_L = \frac{V_3^2}{R_L} = 24W$$

Example 7. COMBINE R's – CURRENT & VOLTAGE DIVISION

Find R_{EQ} , V_{IN} , V_1 , and I_2



(70 in series with 45 in series with 65)

in parallel with

[(30 in parallel with 15) in series with 10]

$$R_{EQ} = [70 + 45 + 65] // [10 + (30 // 15)] = 180 // 20 = 18\Omega$$

$$V_{in} = I_S R_{EQ} = (10)(18) = 180V$$

$$V_{in} = V_{firstbranch} = V_{secondbranch}$$

Voltage Division \Rightarrow

$$V_1 = \left(\frac{10}{10 + 10} \right) V_{in} = \left(\frac{10}{20} \right) (180) = 90V$$

Current Division \Rightarrow

$$I_2 = \left(\frac{20}{180 + 20} \right) I_S = \left(\frac{20}{200} \right) (10) = 1A$$