Series Resistance – Breakout #1

- The equivalent resistance of a series circuit with four resistors is 138 k-ohms. Find R4 if:
  - R1 = 56 k-ohms
  - R2 = 22 k-ohms
  - R3 = 33 k-ohms

$$R_T = R_1 + R_2 + R_3 + R_4$$

$$138\,k\Omega = 56\,k\Omega + 22\,k\Omega + 33\,k\Omega + R_4$$

$$R_4 = 138\,k\Omega - 111\,k\Omega = 27\,k\Omega$$

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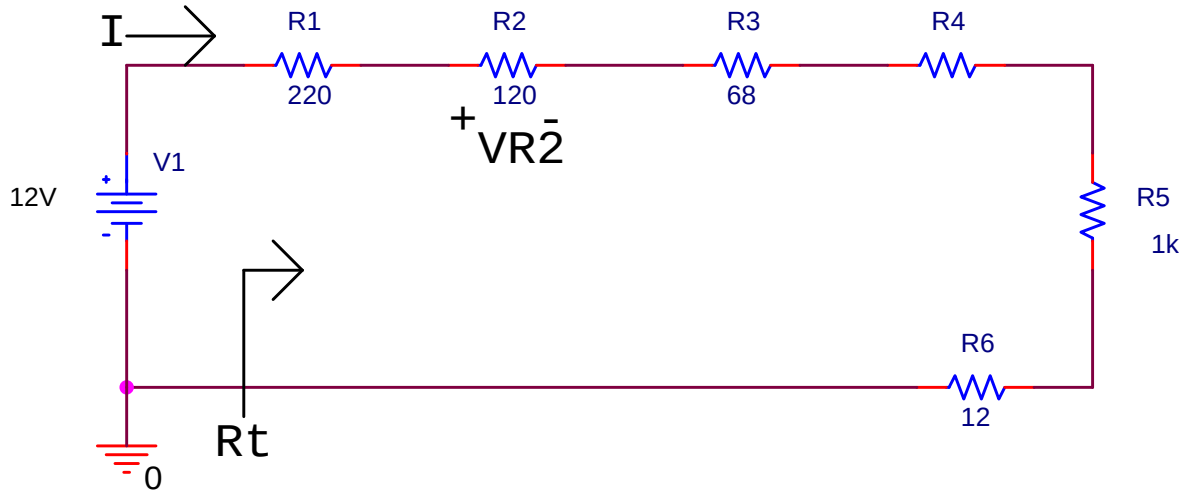
Series Circuit Analysis – Breakout #2



$$(a)\ I = \frac{V_{R2}}{R_2} = \frac{878.0\,\text{mV}}{120\,\Omega} = 7.317\,\text{mA}$$

$$(b)\ R_T = \frac{V_1}{I} = \frac{12\,\text{V}}{7.317\,\text{mA}} = 1{,}640\,\Omega$$

$$(c)\ R_4 = R_T - \left(R_1 + R_2 + R_3 + R_5 + R_6\right)$$

$$R4 = 1{,}640\,\Omega - 1{,}420\,\Omega = 220.0\,\Omega$$

$$(d)\ P_{\text{Source}} = V_1 \cdot I = 12\,\text{V} \cdot 7.317\,\text{mA}$$

$$= 87.80\,\text{mW (delivered)}$$

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