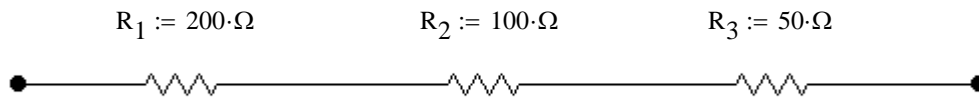


3.1 Tre resistanser på hhv. 200 ohm, 100 ohm. og 50 ohm er serieforbundet. Serieforbindelsen er tilsluttet 175 V.

Find

- effekten i hver af resistanserne
- den samlede effekt.



$$U := 175 \cdot V$$

$$U_1 := U \cdot \left(\frac{R_1}{R_1 + R_2 + R_3} \right) \quad U_2 := U \cdot \left(\frac{R_2}{R_1 + R_2 + R_3} \right) \quad U_3 := U \cdot \left(\frac{R_3}{R_1 + R_2 + R_3} \right)$$

$$U_1 = 100 \text{ V}$$

$$U_2 = 50 \text{ V}$$

$$U_3 = 25 \text{ V}$$

$$P_1 := \frac{U_1^2}{R_1}$$

$$P_2 := \frac{U_2^2}{R_2}$$

$$P_3 := \frac{U_3^2}{R_3}$$

$$P_1 = 50 \text{ W}$$

$$P_2 = 25 \text{ W}$$

$$P_3 = 12.5 \text{ W}$$

eller:

$$I := \frac{U}{R_1 + R_2 + R_3}$$

$$I = 0.5 \text{ A}$$

$$P_1 := I^2 \cdot R_1$$

$$P_2 := I^2 \cdot R_2$$

$$P_3 := I^2 \cdot R_3$$

$$P_1 = 50 \text{ W}$$

$$P_2 = 25 \text{ W}$$

$$P_3 = 12.5 \text{ W}$$

eller

$$P_1 := U_1 \cdot I$$

$$P_2 := U_2 \cdot I$$

$$P_3 := U_3 \cdot I$$

$$P_1 = 50 \text{ W}$$

$$P_2 = 25 \text{ W}$$

$$P_3 = 12.5 \text{ W}$$

b:

$$P := \frac{U^2}{R_1 + R_2 + R_3}$$

$$P = 87.5 \text{ W}$$

eller $P_{\text{alt}} := P_1 + P_2 + P_3$

$$P_{\text{alt}} = 87.5 \text{ W}$$

eller: $P_{\text{alt2}} := I^2 \cdot (R_1 + R_2 + R_3)$

$$P_{\text{alt2}} = 87.5 \text{ W}$$

eller $P_{\text{alt3}} := U \cdot I$

$$P_{\text{alt3}} = 87.5 \text{ W}$$