



Dane

$$R_1 := 1 \cdot \Omega$$

$$R_2 := 0.5 \cdot \Omega$$

$$R_3 := 1 \cdot \Omega$$

$$R_4 := 2 \cdot \Omega$$

$$R_5 := 2 \cdot \Omega$$

$$R_7 := 1 \cdot \Omega$$

$$J_6 := 2 \cdot A$$

$$J_8 := 2 \cdot A$$

$$I_1 := 0 \quad I_2 := 0 \quad I_3 := -J_6 \quad I_4 := J_8$$

Given **Metoda prądów oczkowych:**

$$I_1 \cdot (R_1 + R_2 + R_4) - I_2 \cdot R_2 - I_3 \cdot R_4 = 0$$

$$-I_1 \cdot R_2 + I_2 \cdot (R_2 + R_3 + R_5) - I_4 \cdot R_5 = 0$$

$$I := \text{Find}(I) \quad I^T = (-1 \quad 1 \quad -2 \quad 2) A$$

$$I_1 := I_1 = -1 A \quad I_2 := I_2 - I_1 = 2 A \quad I_3 := -I_2 = -1 A$$

$$I_4 := I_1 - I_3 = 1 A \quad I_5 := I_2 - J_6 = -1 A \quad I_7 := J_6 - I_3 = 4 A$$

$$V_1 := 0 \quad V_2 := 0 \quad V_3 := 0 \quad V_4 := 0$$

Given **Metoda potencjałów węzłowych:**

$$V_1 \cdot \left(\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} \right) - \frac{V_2}{R_1} - \frac{V_3}{R_2} - \frac{V_4}{R_3} = 0$$

$$-\frac{V_1}{R_1} + V_2 \cdot \left(\frac{1}{R_1} + \frac{1}{R_4} \right) - \frac{V_3}{R_4} = J_6$$

$$-\frac{V_1}{R_2} - \frac{V_2}{R_4} + V_3 \cdot \left(\frac{1}{R_2} + \frac{1}{R_4} + \frac{1}{R_5} + \frac{1}{R_7} \right) - \frac{V_4}{R_5} = 0$$

$$-\frac{V_1}{R_3} - \frac{V_3}{R_5} + V_4 \cdot \left(\frac{1}{R_3} + \frac{1}{R_5} \right) = J_8$$

$$V := \text{Find}(V) \quad V^T = (5 \quad 6 \quad 4 \quad 6) V$$

$$I_1 := \frac{V_1 - V_2}{R_1} = -1 A \quad I_2 := \frac{(V_1 - V_3)}{R_2} = 2 A \quad I_3 := \frac{(V_1 - V_4)}{R_3} = -1 A$$

$$I_4 := \frac{(V_2 - V_3)}{R_4} = 1 A \quad I_5 := \frac{(V_3 - V_4)}{R_5} = -1 A \quad I_7 := \frac{V_3}{R_7} = 4 A$$