

POEL C1: Prawa Ohma i Kirchhoffa, łączenie elementów, przekształcenie $\Delta - Y$ (odpowiedzi)

Zadanie 1. (a) $R_z = R_1 + R_2$, $G_z = \frac{G_1 G_2}{G_1 + G_2}$; (b) $R_z = \frac{R_1 R_2}{R_1 + R_2}$, $G_z = G_1 + G_2$; (c) $R_z = R_1 + R_2 + R_3$, $G_z = \frac{G_1 G_2 G_3}{G_1 G_2 + G_1 G_3 + G_2 G_3}$; (d) $R_z = \frac{R_1 R_2 R_3}{R_1 R_2 + R_1 R_3 + R_2 R_3}$, $G_z = G_1 + G_2 + G_3$.

Zadanie 2. (a) $10 \text{ k}\Omega$, (b) 15Ω .

Zadanie 3. (a) $R = \sqrt{R_1 (R_1 + 2R_2)}$; (b) $R = \frac{1}{\sqrt{G_1 (G_1 + 2G_2)}} = R_1 \sqrt{\frac{R_2}{2R_1 + R_2}}$.

Zadanie 4. (a) $I_1 = 1 \text{ A}$, $I_2 = 0 \text{ A}$, $I_3 = 1 \text{ A}$, $I_4 = 0 \text{ A}$, $I_5 = -1 \text{ A}$; (b) $I_1 = \frac{65}{63} \text{ A}$, $I_2 = \frac{32}{63} \text{ A}$, $I_3 = \frac{47}{63} \text{ A}$, $I_4 = \frac{50}{63} \text{ A}$, $I_5 = \frac{15}{63} \text{ A}$, $I_6 = \frac{97}{63} \text{ A}$.

Zadanie 5. $I_1 = \frac{90}{49} \text{ A}$, $I_2 = \frac{64}{49} \text{ A}$.