



$$\hat{I}_1 R + \hat{I}_5 R - \hat{I}_4 R - \hat{I}_2 \cdot 2R = 0$$

$$\hat{I}_1 R + \hat{I}_3 R - \hat{I}_2 \cdot 2R = 0$$

$$\hat{I}_3 + \hat{I}_2 = \hat{I}_4$$

$$-\hat{I}_5 R + \hat{I}_3 R + \hat{I}_4 R = 0$$

$$\begin{cases} \hat{I}_5 = \hat{I}_3 + \hat{I}_4 \\ \hat{I}_1 = \hat{I}_3 + \hat{I}_5 \end{cases}$$

$$\hat{I}_1 - \hat{I}_3 = \hat{I}_3 + \hat{I}_4$$

$$2\hat{I}_3 = \hat{I}_1 - \hat{I}_4$$

$$\hat{I}_3 = \frac{\hat{I}_1 - \hat{I}_4}{2}$$

$$\hat{I}_1 R + (\hat{I}_1 - \hat{I}_4) \cdot \frac{R}{2} - (\hat{I}_4 - \hat{I}_3) \cdot 2R = 0$$

$$\hat{I}_1 + \frac{\hat{I}_1}{2} - \frac{\hat{I}_4}{2} - 2\hat{I}_4 + 2 \left(\frac{\hat{I}_1 - \hat{I}_4}{2} \right) = 0$$

$$\frac{3}{2} \hat{I}_1 - \frac{5}{2} \hat{I}_4 + \hat{I}_1 - \hat{I}_4 = 0$$

$$\hat{I}_4 = \frac{5}{4} \hat{I}_1$$

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$$\begin{aligned} \hat{I}_5 - \hat{I}_3 &= \frac{5}{7} \hat{I}_1 \\ \hat{I}_5 + \hat{I}_3 &= \hat{I}_1 \end{aligned}$$

$$2\hat{I}_5 = \frac{12}{7} \hat{I}_1 \quad \hat{I}_5 = \frac{12}{14} \hat{I}_1$$

$$\hat{I}_0 = \left(\frac{12}{14} + \frac{5}{7} \right) \hat{I}_1 = \frac{22}{14} \hat{I}_1 = \frac{11}{7} \hat{I}_1$$

R_0

$$R_0 = \frac{U_1 - U_4}{\hat{I}_0} = \frac{\hat{I}_1 R + \frac{12}{14} \hat{I}_1 R}{\frac{11}{7} \hat{I}_1} = \frac{13}{11} R$$