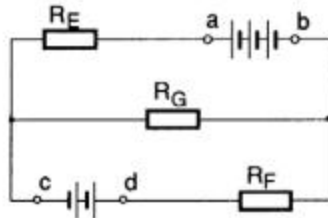


2.47 Bestem for det viste kredsløb

- strømmenes størrelse og retning
- klemspændingerne U_{ab} og U_{cd} , samt spændingen over modstanden R_G .



Batteriet ab består af 3 serieforbundne elementer, hver med $E = 2,0 \text{ V}$ og $R_i = 1,0 \Omega$.

Batteriet cd udgøres af to elementer, ligeledes med $E = 2,0 \text{ V}$ og $R_i = 1,0 \Omega$.

De viste resistanser har flg. værdier:

$$R_E = 2,0 \Omega \quad R_F = 3,0 \Omega \quad R_G = 4,0 \Omega.$$

$$E = 2 \text{ V}$$

$$R_i = 1 \Omega$$

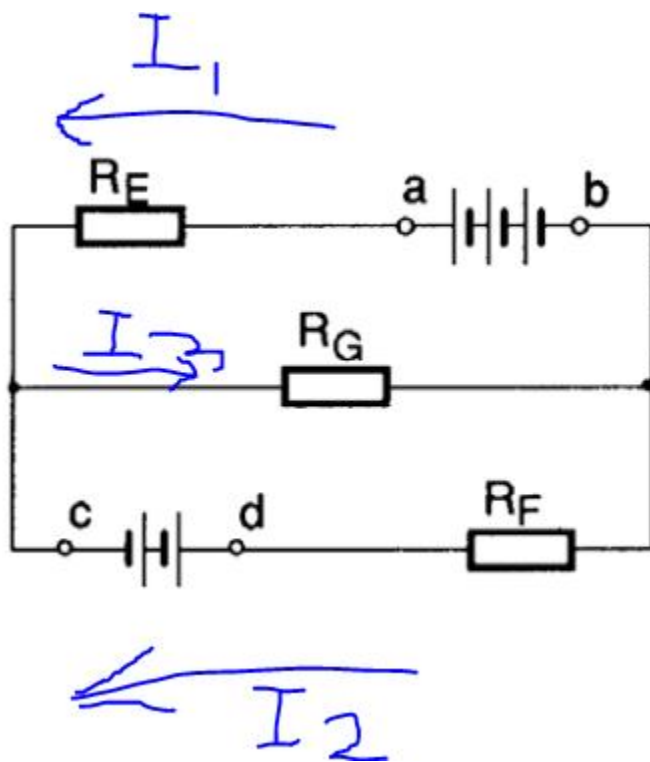
$$R_E = 2 \Omega$$

$$R_F = 3 \Omega$$

$$R_G = 4 \Omega$$

$$E_{ab} = 3 \cdot E = 3 \cdot 2 \cdot \text{V} = 6 \text{ V} \quad R_{ab} = 3 \cdot R_i = 3 \cdot \Omega = 3 \Omega$$

$$E_{cd} = 2 \cdot E = 2 \cdot 2 \cdot \text{V} = 4 \text{ V} \quad R_{cd} = 2 \cdot R_i = 2 \cdot \Omega = 2 \Omega$$



$$I_1 = 1 \text{ A}$$

$$I_2 = 1 \text{ A}$$

$$I_3 = 1 \text{ A}$$

Given

$$I_1 + I_2 = I_3$$

$$-I_1 \cdot R_E - I_1 \cdot R_{ab} - I_3 \cdot R_G = -E_{ab}$$

$$I_3 \cdot R_G + I_2 \cdot R_F + I_2 \cdot R_{cd} = -E_{cd}$$

$$\text{Find}(I_1, I_2, I_3) = \begin{pmatrix} 1.077 \\ -0.923 \\ 0.154 \end{pmatrix} \text{ A}$$

$$I_{1,} = 1.077 \text{ A}$$

$$I_{2,} = 0.923 \text{ A}$$

$$I_{3,} = 0.154 \text{ A}$$

$$U_{ab} = (E_{ab} - I_{1,} \cdot R_{ab}) = 2.769 \text{ V}$$

$$U_{cd} = E_{cd} - I_{2,} \cdot R_{cd} = 2.154 \text{ V}$$

$$U_{RG} = I_{3,} \cdot R_G = 0.616 \text{ V}$$

$$U_{ab} - U_{cd} = 0.615 \text{ V}$$