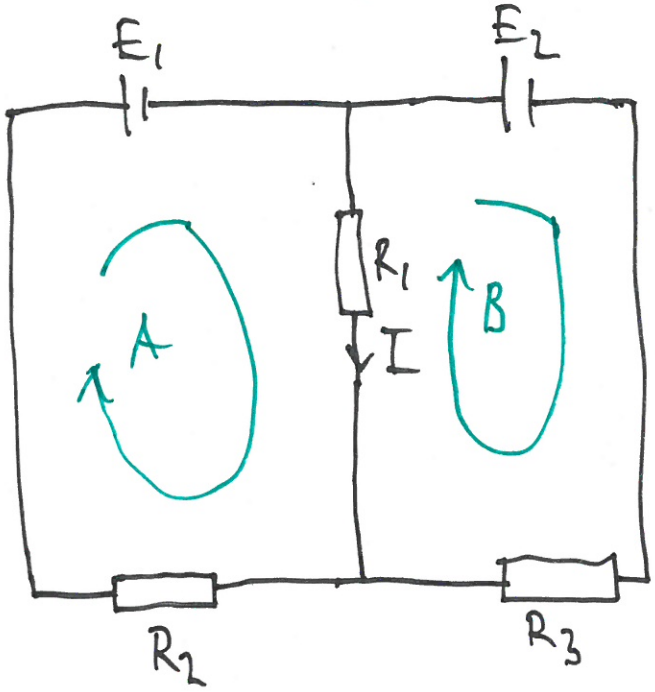
A 1.4) Lösning med slinganalys



$E_1 = 4.0\,V$
$E_2 = 2.0\,V$
$R_1 = 10\,\Omega$
$R_2 = 100\,\Omega$
$R_3 = 25\,\Omega$

$$-I_A \cdot R_2 - E_1 - (I_A - I_B)\cdot R_1 = 0$$

$$-E_2 - I_B \cdot R_3 - (I_B - I_A)\cdot R_1 = 0$$

$\Rightarrow$

$$-(R_1+R_2)\cdot I_A + R_1 \cdot I_B = E_1$$

$$+I_A \cdot R_1 - (R_1+R_3)\cdot I_B = E_2$$

$\Rightarrow$

$$\begin{bmatrix} -(R_1+R_2) & R_1 \\ R_1 & -(R_1+R_3) \end{bmatrix} \begin{bmatrix} I_A \\ I_B \end{bmatrix} = \begin{bmatrix} E_1 \\ E_2 \end{bmatrix}$$

$\Rightarrow I_A = -43\,mA$, $I_B = -69\,mA$

$I = I_A - I_B \approx 26\,mA$

$\boxed{I \approx 26\,mA}$