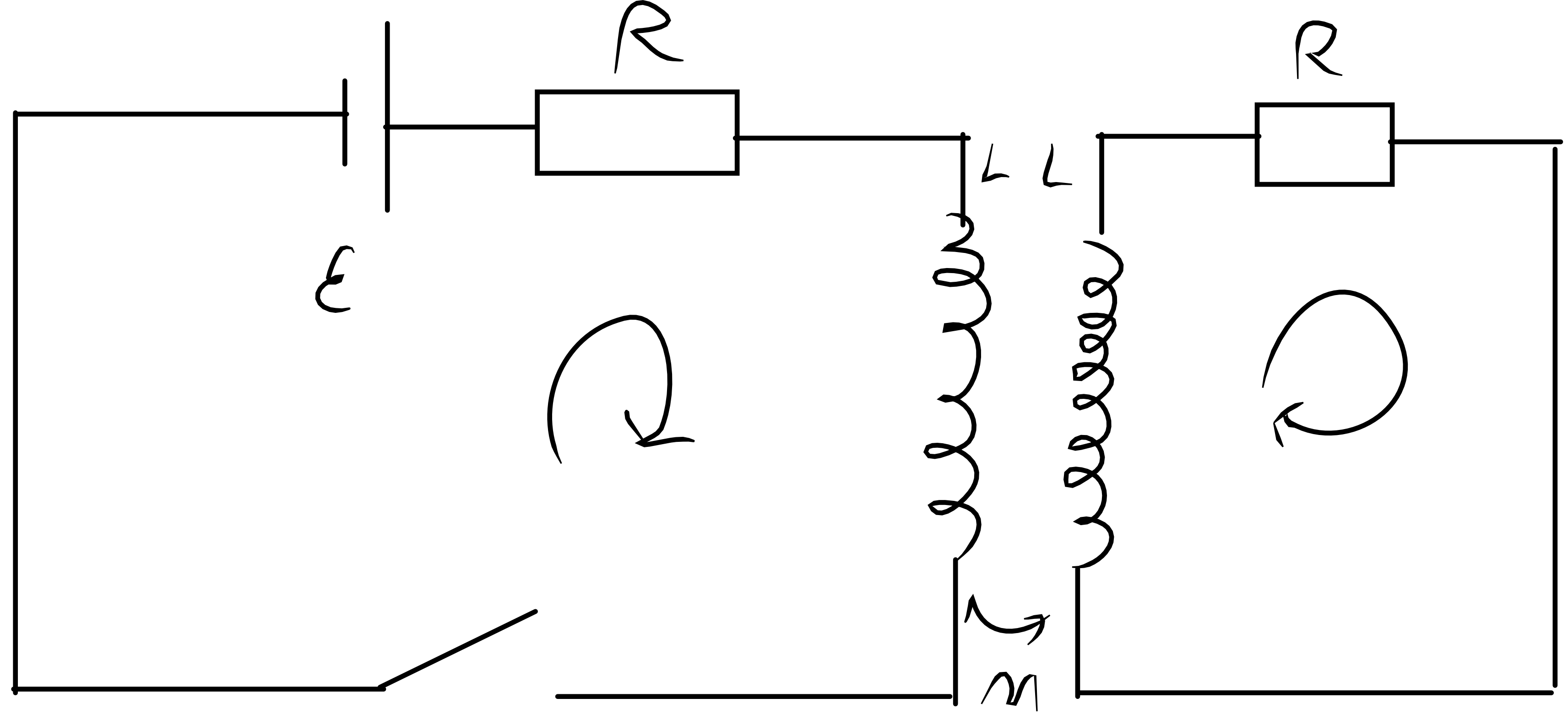

$$\varepsilon = L\dot{I}_1 + M\dot{I}_2 + RI_1$$

$$0 = RI_2 + L\dot{I}_2 + M\dot{I}_1$$

RSRN

zgadując, że I_1 i I_2 są stałe:

$$I_2 = 0 \qquad I_1 = \frac{\varepsilon}{R}$$

RORJ $\quad I_1 = Ae^{-\omega t} \quad I_2 = Be^{-\omega t}$

$$0 = -AL\omega - MB\omega + RA$$

$$0 = RB - LB\omega - LA\omega$$

$$\begin{bmatrix} R-L\omega & -M\omega \\ -M\omega & R-L\omega \end{bmatrix}\begin{bmatrix} A \\ B \end{bmatrix} = \bar{0}$$

$$(R-L\omega)^2 - M^2\omega^2 = 0$$

$$(R-L\omega-M\omega)(R-L\omega+M\omega) = 0$$

$$\omega_1 = \frac{R}{L+M} \qquad \omega_2 = \frac{R}{L-M}$$

dla $\omega = \omega_1$

$$\begin{bmatrix} \frac{MR}{L+M} & -\frac{MR}{L+M} \\ -\frac{MR}{L+M} & \frac{MR}{L+M} \end{bmatrix}\begin{bmatrix} A \\ B \end{bmatrix} = \bar{0}$$

$$A_1 = -B_1$$

dla $\omega = \omega_2$

$$\begin{bmatrix} \frac{MR}{L+M} & \frac{MR}{L+M} \\ \frac{MR}{L+M} & \frac{MR}{L+M} \end{bmatrix}\begin{bmatrix} A \\ B \end{bmatrix} = \bar{0}$$

$$A_2 = B_2$$

RORN

$$I_1 = \frac{\varepsilon}{R} + A_1e^{-\omega_1 t} + A_2e^{-\omega_2 t}$$

$$I_2 = -A_1e^{-\omega_1 t} + A_2e^{-\omega_2 t}$$

$$I_1(0) = 0$$
$$I_2(0) = 0$$
$$\Rightarrow A_1 = A_2 = -\frac{\varepsilon}{2R}$$

$$I_1 = \frac{\varepsilon}{R}\left(1 - \frac{1}{2}e^{-\omega_1 t} - \frac{1}{2}e^{-\omega_2 t}\right)$$

$$I_2 = \frac{\varepsilon}{2R}\left(-e^{-\omega_1 t} + e^{-\omega_2 t}\right)$$