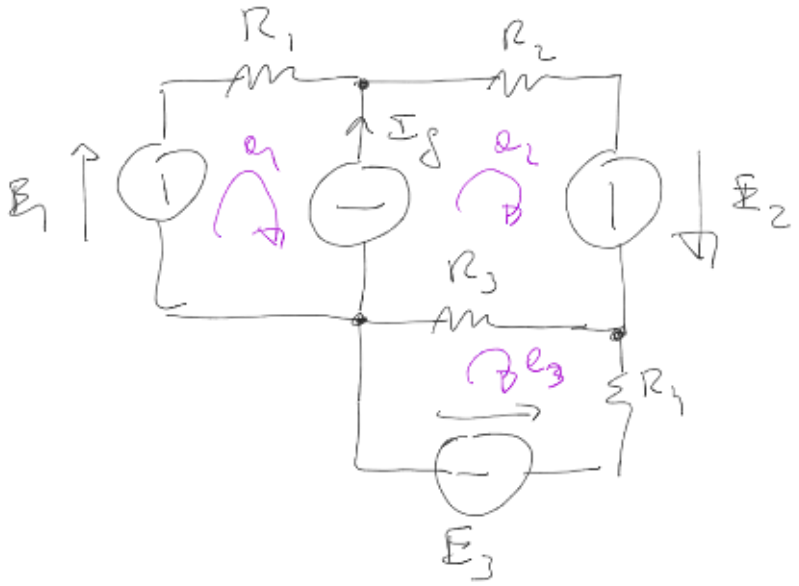
Lezione 18



METODO DEGLI ANELLI

$$\begin{matrix} & 1 & 2 & 3 \\ 1 & R_1 & 0 & 0 \\ 2 & 0 & R_2+R_3 & -R_3 \\ 3 & 0 & -R_3 & R_3+R_4 \end{matrix} \begin{bmatrix} I_{e_1} \\ I_{e_2} \\ I_{e_3} \end{bmatrix} = \begin{bmatrix} E_1 - V_g \\ V_g + E_2 \\ -E_3 \end{bmatrix}$$

Eq. di VINCOLO: $I_g = I_{e_2} - I_{e_1}$

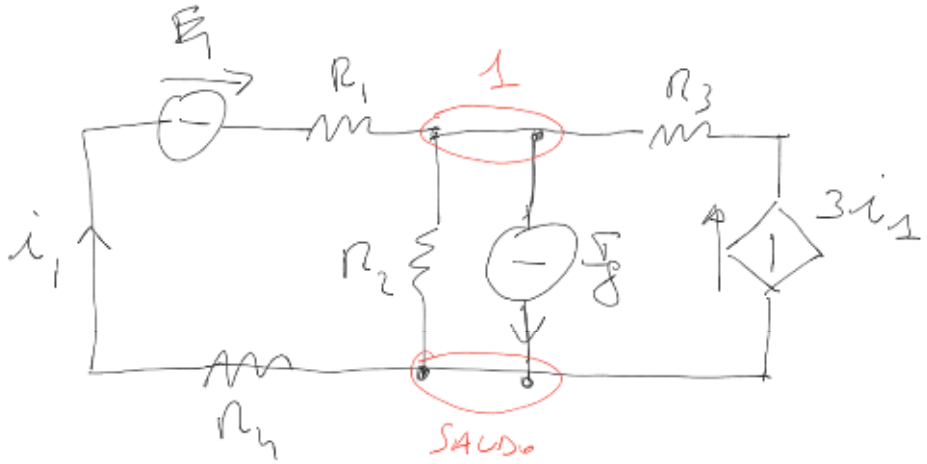
- SFRUTTO $I_{e_2} = I_g + I_{e_1}$
- SFRUTTO $I_{e_1} = I_{e_2} - I_g$

$$\begin{matrix} & 1 & 2 & 3 \\ 1 & R_1 & 0 & 0 \end{matrix} \begin{bmatrix} I_{e_2} - I_{e_1} \end{bmatrix} \begin{bmatrix} E_1 - V_g \end{bmatrix}$$

$$
\begin{matrix} 2 \\ 3 \end{matrix}
\begin{bmatrix} 0 & R_2+R_3 & -R_3 \\ 0 & -R_3 & R_3+R_4 \end{bmatrix}
\begin{bmatrix} \dot{I}_{e_2} \\ \dot{I}_{e_3} \end{bmatrix}
=
\begin{bmatrix} V_g + E_2 \\ -E_3 \end{bmatrix}
$$

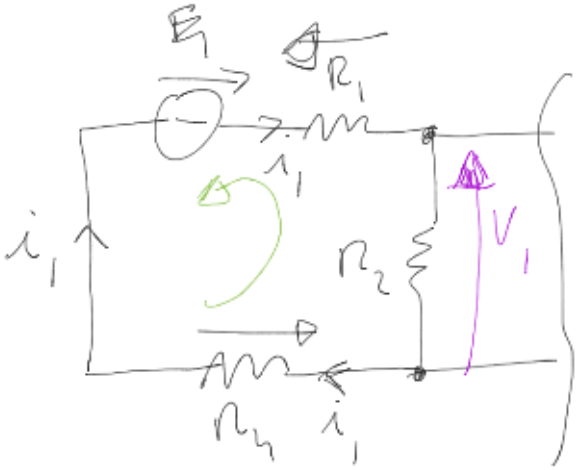
$$
\underbrace{\begin{bmatrix} R_1 \\ 0 \\ 0 \end{bmatrix} \dot{I}_{e_2}}_{\text{INCOGN}}
=
\underbrace{\begin{bmatrix} R_1 \\ 0 \\ 0 \end{bmatrix} \dot{I}_g}_{\text{TERMINE NOTO}}
+
\underbrace{\begin{bmatrix} 0 \\ R_2+R_3 \\ -R_3 \end{bmatrix} \dot{I}_{e_2}}_{\text{INCOGN}}
+
\underbrace{\begin{bmatrix} 0 \\ -R_3 \\ R_3+R_4 \end{bmatrix} \dot{I}_{e_3}}_{\text{INCOGN}}
=
\underbrace{\begin{bmatrix} E_1 \\ E_2 \\ -E_3 \end{bmatrix}}_{\text{TERMINE NOTO}}
+
\underbrace{\begin{bmatrix} -1 \\ 1 \\ 0 \end{bmatrix} V_g}_{\text{INCOGN}}
$$

$$
\begin{bmatrix} R_1 & 0 & 1 \\ R_2+R_3 & -R_3 & -1 \\ -R_3 & R_3+R_4 & 0 \end{bmatrix}
\begin{bmatrix} \dot{I}_{e_2} \\ \dot{I}_{e_3} \\ V_g \end{bmatrix}
=
\begin{bmatrix} E_1 + R_1 \dot{I}_g \\ E_2 \\ -E_3 \end{bmatrix}
$$



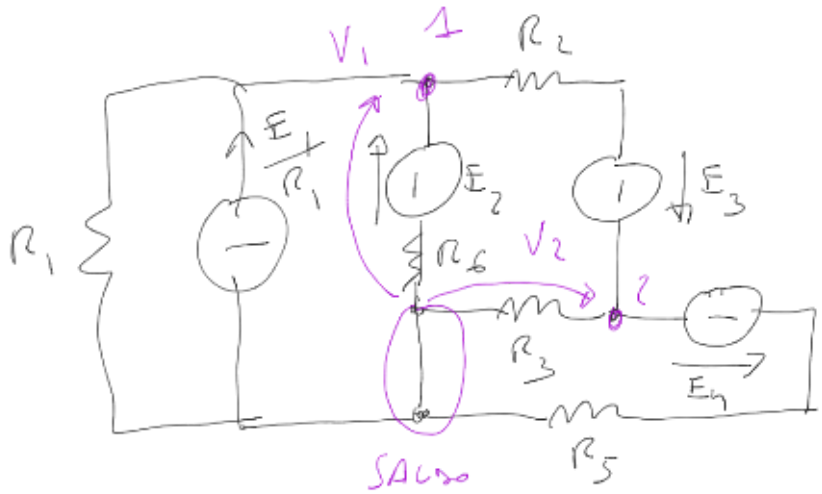
METODO DEI NODI

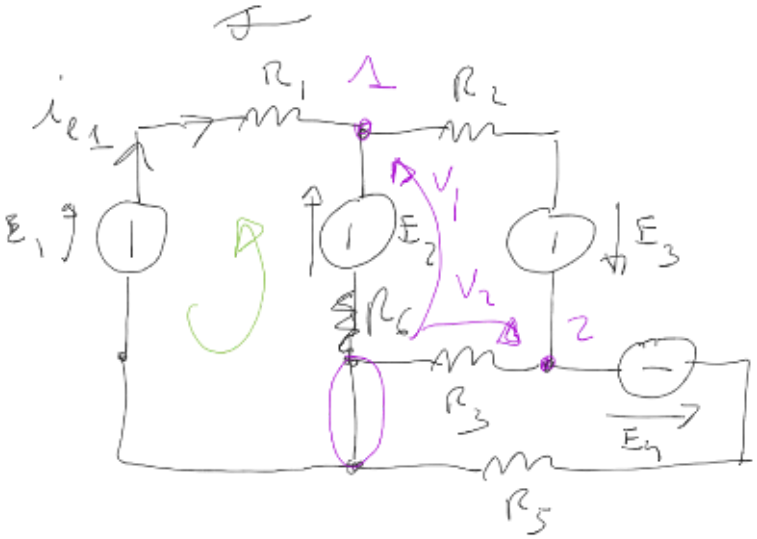
$$\left[\frac{1}{R_1+R_4}+\frac{1}{R_2}+\frac{1}{R_3}\right]\left[V_1\right]=\left[\frac{E_1}{R_1+R_4}-I_g+\frac{3i_1}{R_3}\right]$$



$$V_1+R_4 i_1-E_1+R_1 i_1=0 \qquad E_g \text{ DI VINCOLO}$$

- SFRUTTO $V_1=E_1-(R_1+R_4)i_1$
- SFRUTTO $i_1=\dfrac{E_1-V_1}{R_1+R_4}$



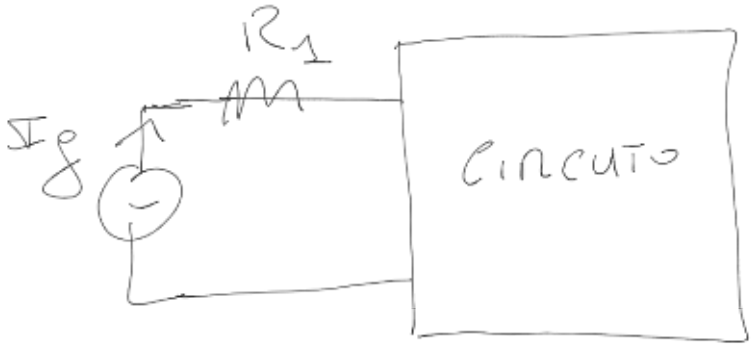


ORIGINALE

$i_{e_1} = ?$

$$+V_1 + R_1 i_{e_1} - E_1 = 0$$

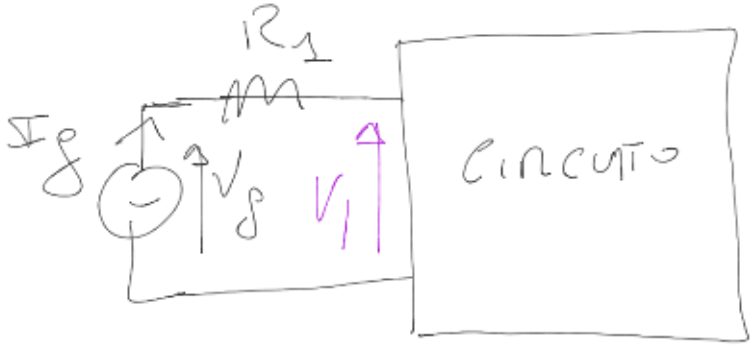
$$i_{e_1} = \frac{E_1 - V_1}{R_1}$$



CALCOLARE LA POTENZA SUL GENERATORE P_g

$P_g \neq V_1 \cdot I_g$

$P_g = V_g \cdot I_g$



$V_g - R_1 I_g - V_1 = 0 \qquad V_g = V_1 + R_1 I_g$

$P_g = V_g I_g = (V_1 + R_1 I_g) I_g$