$V = IR$ $P = I^2 R$

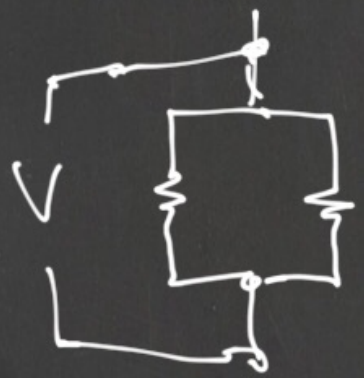
Res. serie

$R_{eq} = \sum_i R_i$

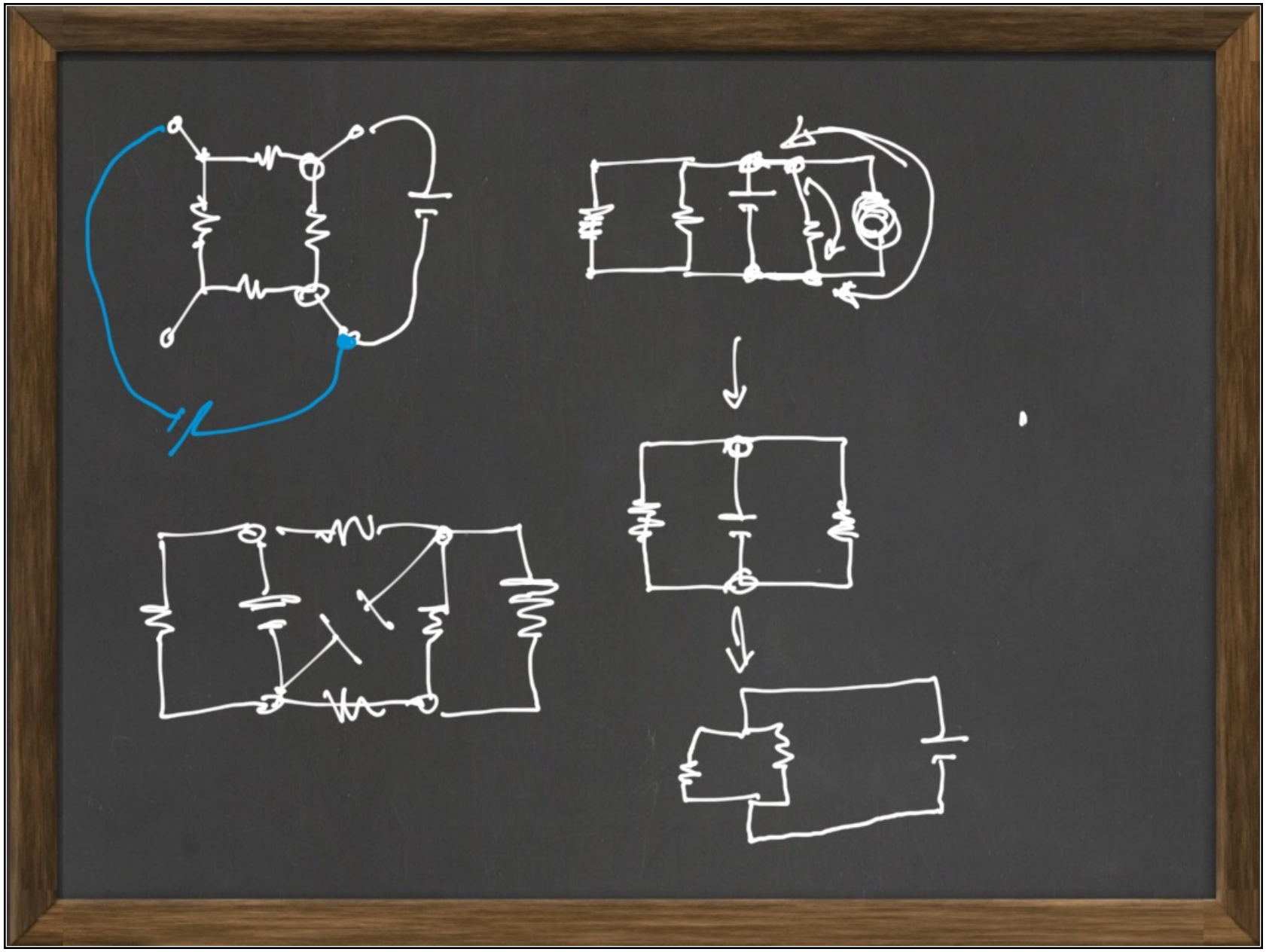
I costante

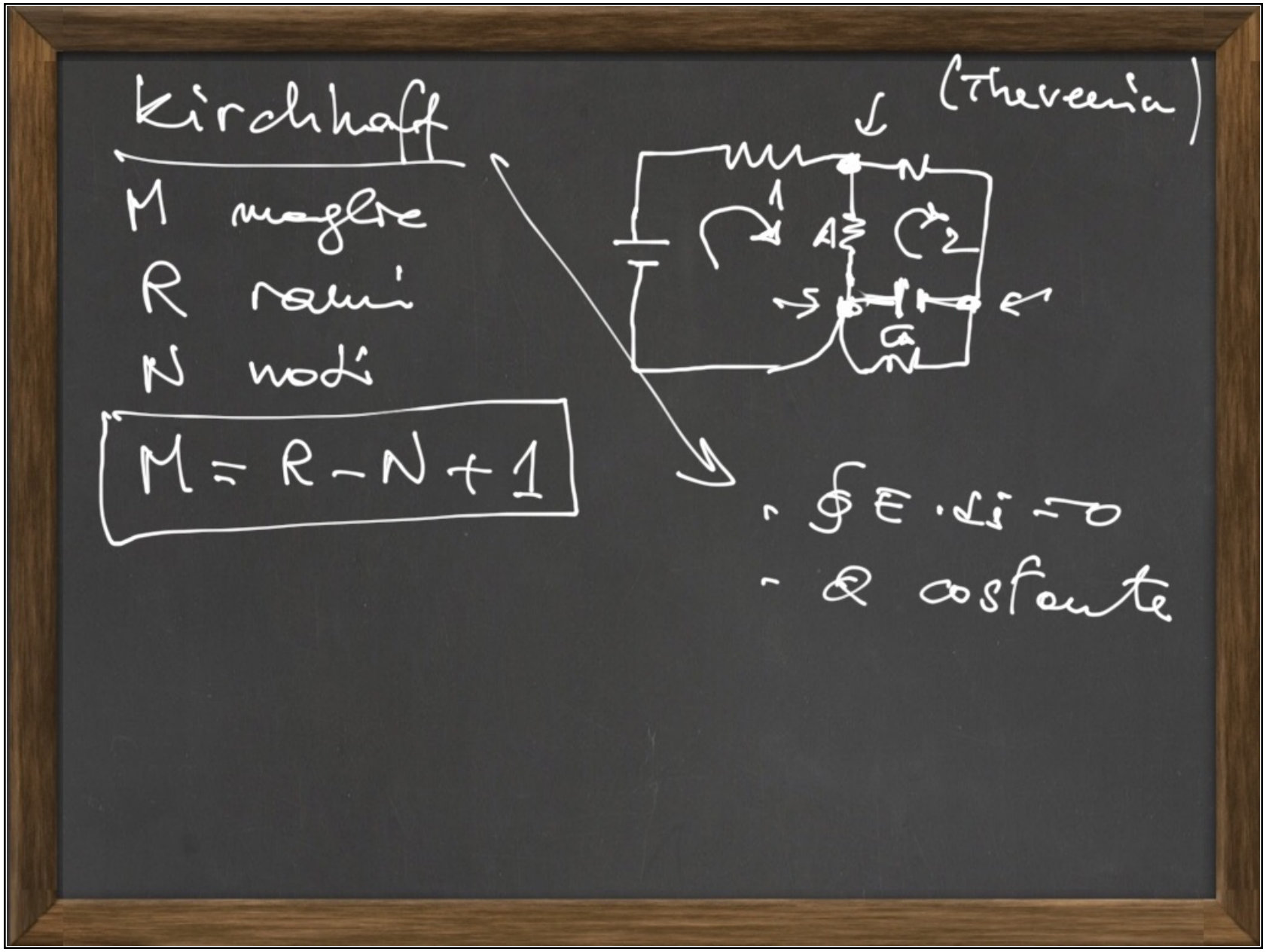
Res. parallelo

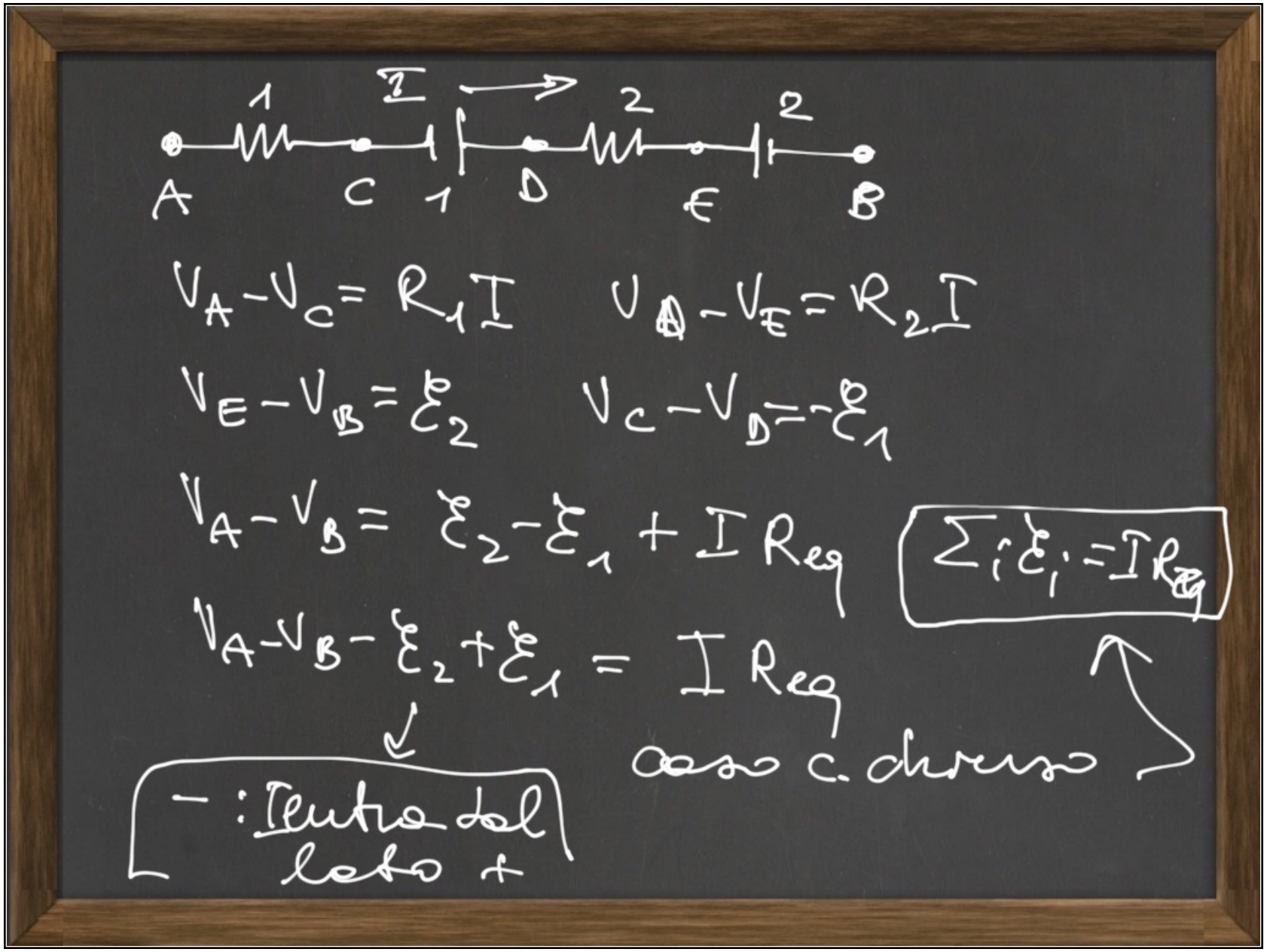
V costante

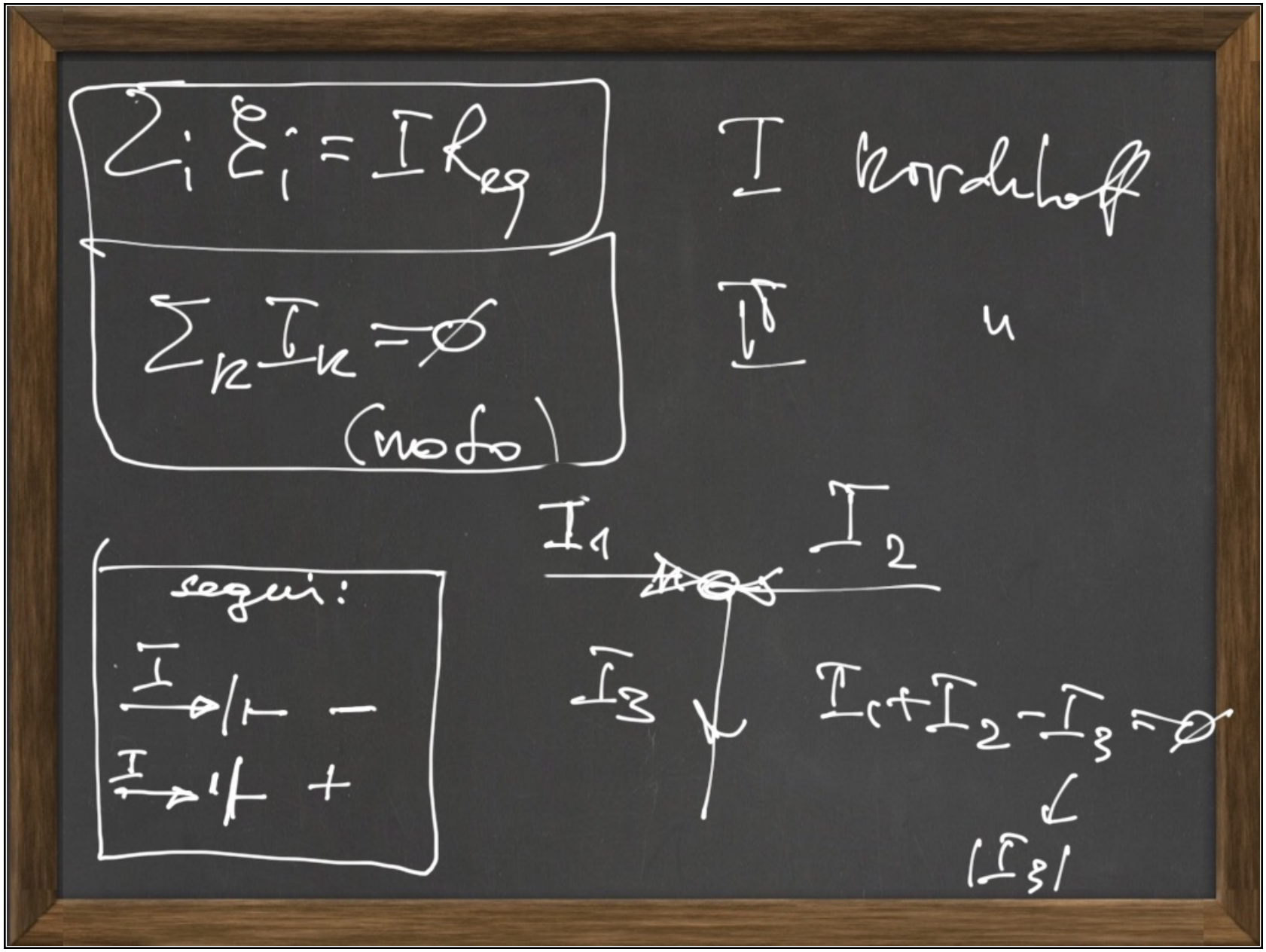


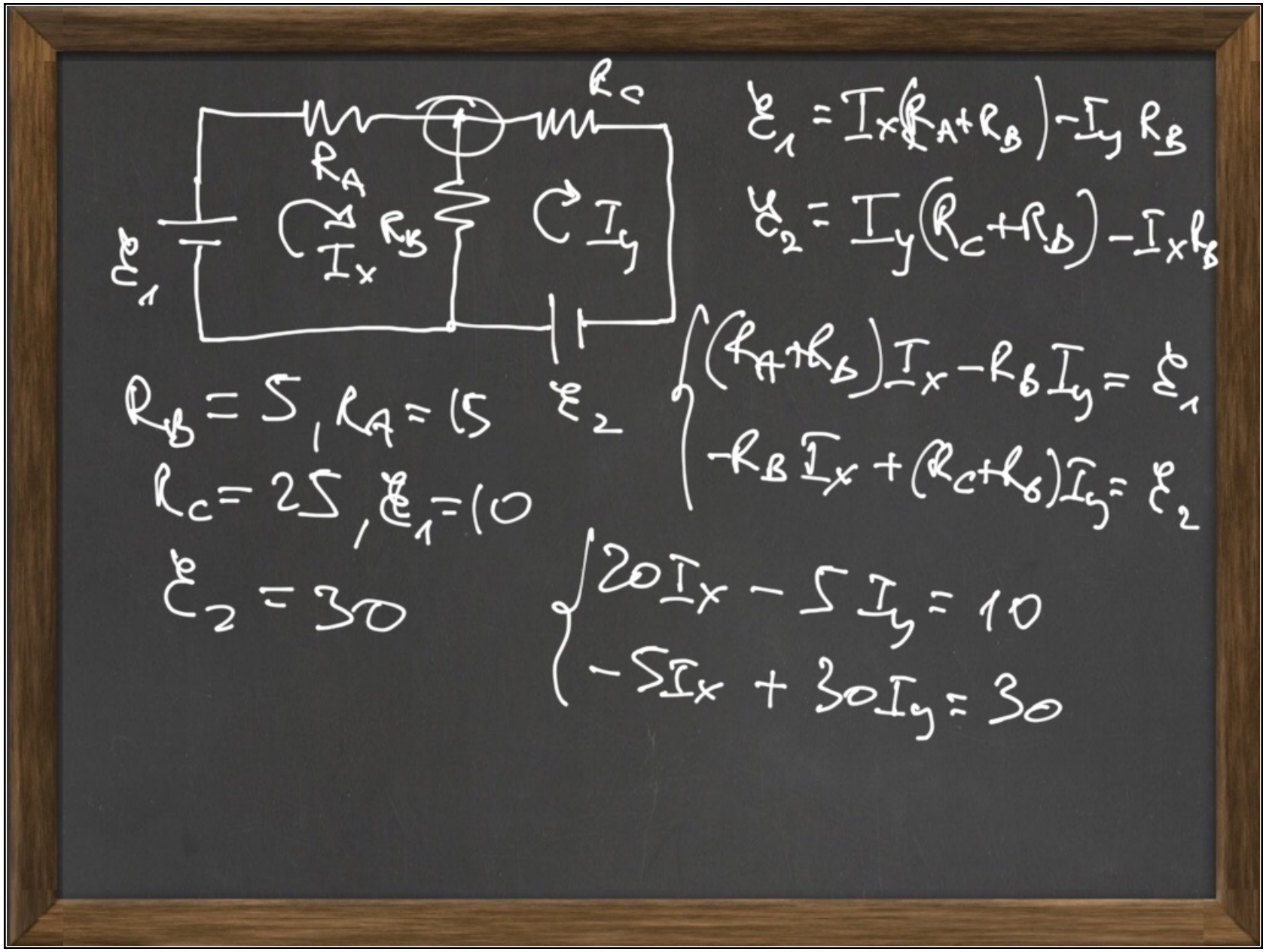
$$\frac{1}{R_{eq}} = \sum_i \frac{1}{R_i}$$

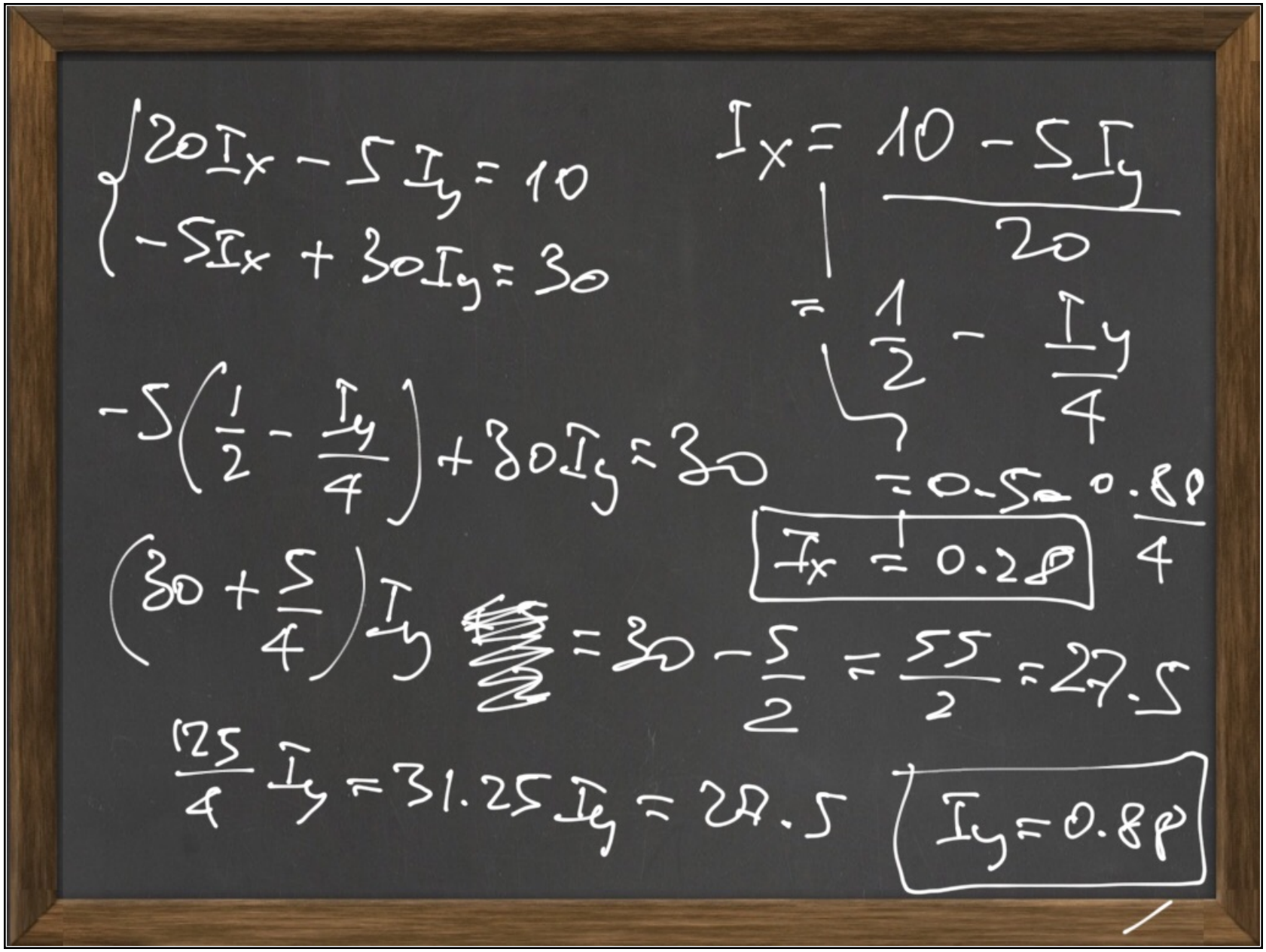


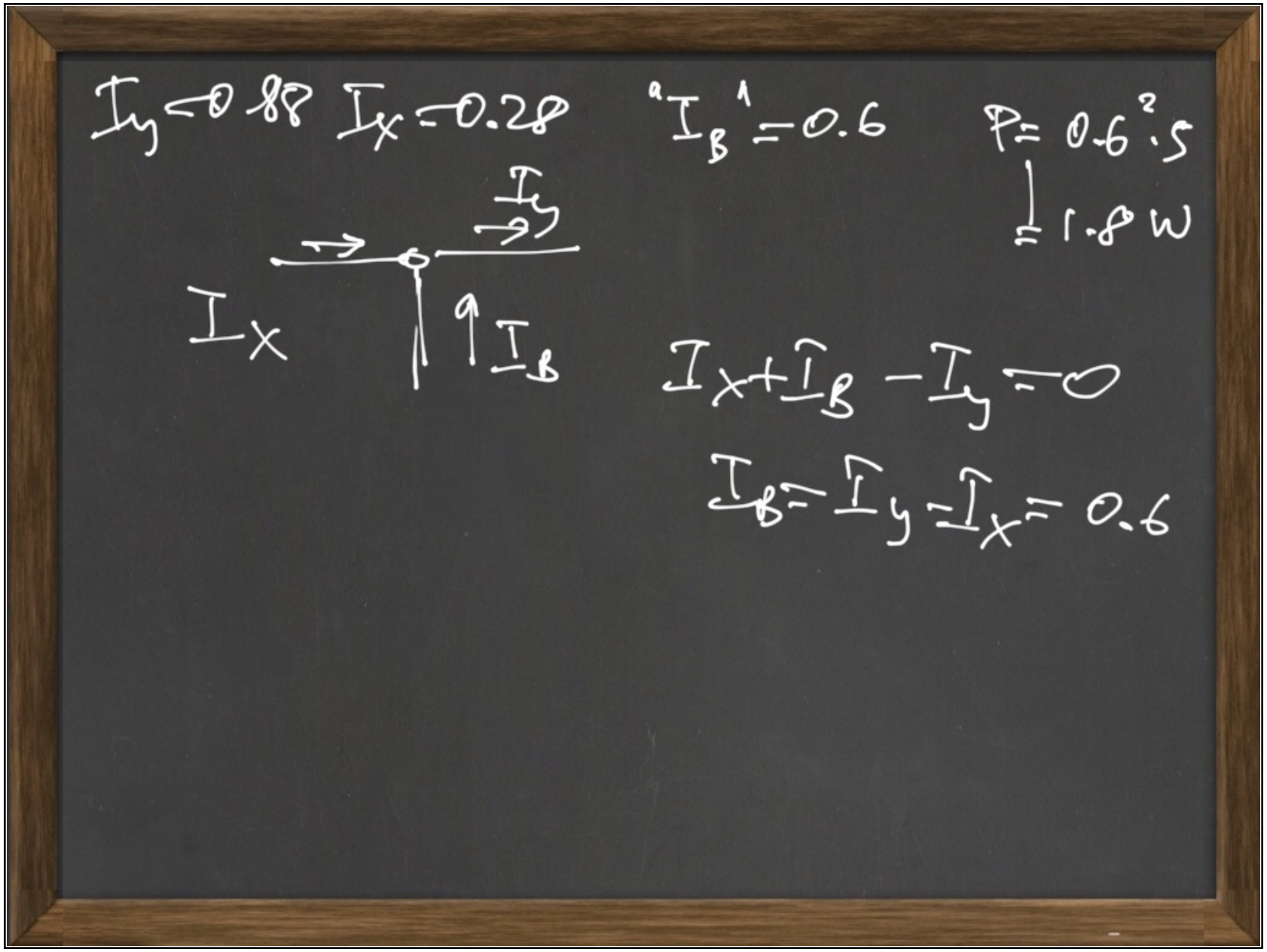

Kirchhoff
M maglie
R rami
N nodi
M = R − N + 1
(Thevenin)
N
A
C_2
C_N
· $\oint E \cdot dl = 0$
· & conservative

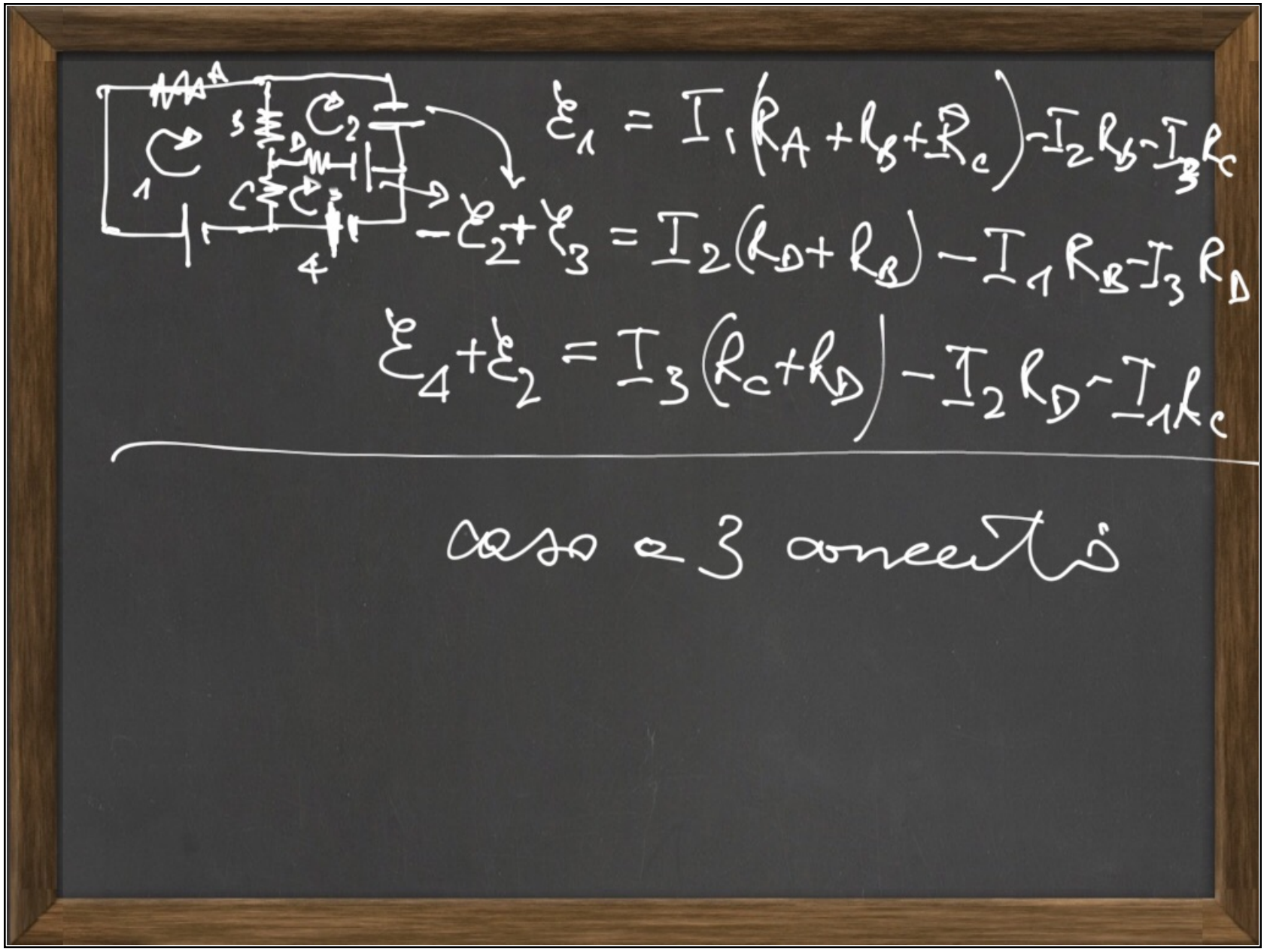

1
I
2
2
A
C
1
D
E
B
$V_A - V_C = R_1 I$
$V_D - V_E = R_2 I$
$V_E - V_B = \mathcal{E}_2$
$V_C - V_D = -\mathcal{E}_1$
$V_A - V_B = \mathcal{E}_2 - \mathcal{E}_1 + I R_{eq}$
$\Sigma_i \mathcal{E}_i = I R_{eq}$
$V_A - V_B - \mathcal{E}_2 + \mathcal{E}_1 = I R_{eq}$
caso c. chiuso
- : Entra dal lato +


$\sum_i \mathcal{E}_i = I R_{eq}$
I Kirchhoff
$\sum_k I_k = 0$
(nodo)
II
segni:
I_1
I_2
I_3
$I_1 + I_2 - I_3 = 0$
$|I_3|$


R_C
R_A
R_B
I_x
I_y
$\mathcal{E}_1$
$\mathcal{E}_2$
$\mathcal{E}_1 = I_x(R_A+R_B) - I_y R_B$
$\mathcal{E}_2 = I_y(R_C+R_B) - I_x R_B$
$R_B = 5, R_A = 15$
$R_C = 25, \mathcal{E}_1 = 10$
$\mathcal{E}_2 = 30$
$\begin{cases} (R_A+R_B)I_x - R_B I_y = \mathcal{E}_1 \\ -R_B I_x + (R_C+R_B)I_y = \mathcal{E}_2 \end{cases}$
$\begin{cases} 20I_x - 5I_y = 10 \\ -5I_x + 30I_y = 30 \end{cases}$


$\begin{cases} 20I_x - 5I_y = 10 \\ -5I_x + 30I_y = 30 \end{cases}$
$I_x = \frac{10 - 5I_y}{20}$
$= \frac{1}{2} - \frac{I_y}{4}$
$-5\left(\frac{1}{2} - \frac{I_y}{4}\right) + 30I_y = 30$
$= 0.5 \quad 0.8$
$I_x = 0.2$
$\frac{8}{4}$
$\left(30 + \frac{5}{4}\right) I_y = 30 - \frac{5}{2} = \frac{55}{2} = 27.5$
$\frac{125}{4} I_y = 31.25 I_y = 27.5$
$I_y = 0.8$


$I_y = 0.88$ $I_x = 0.28$
$I_B = 0.6$
$P = 0.6^2 \cdot 5$
$= 1.8\,W$
I_y
I_x
I_B
$I_x + I_B - I_y = 0$
$I_B = I_y - I_x = 0.6$

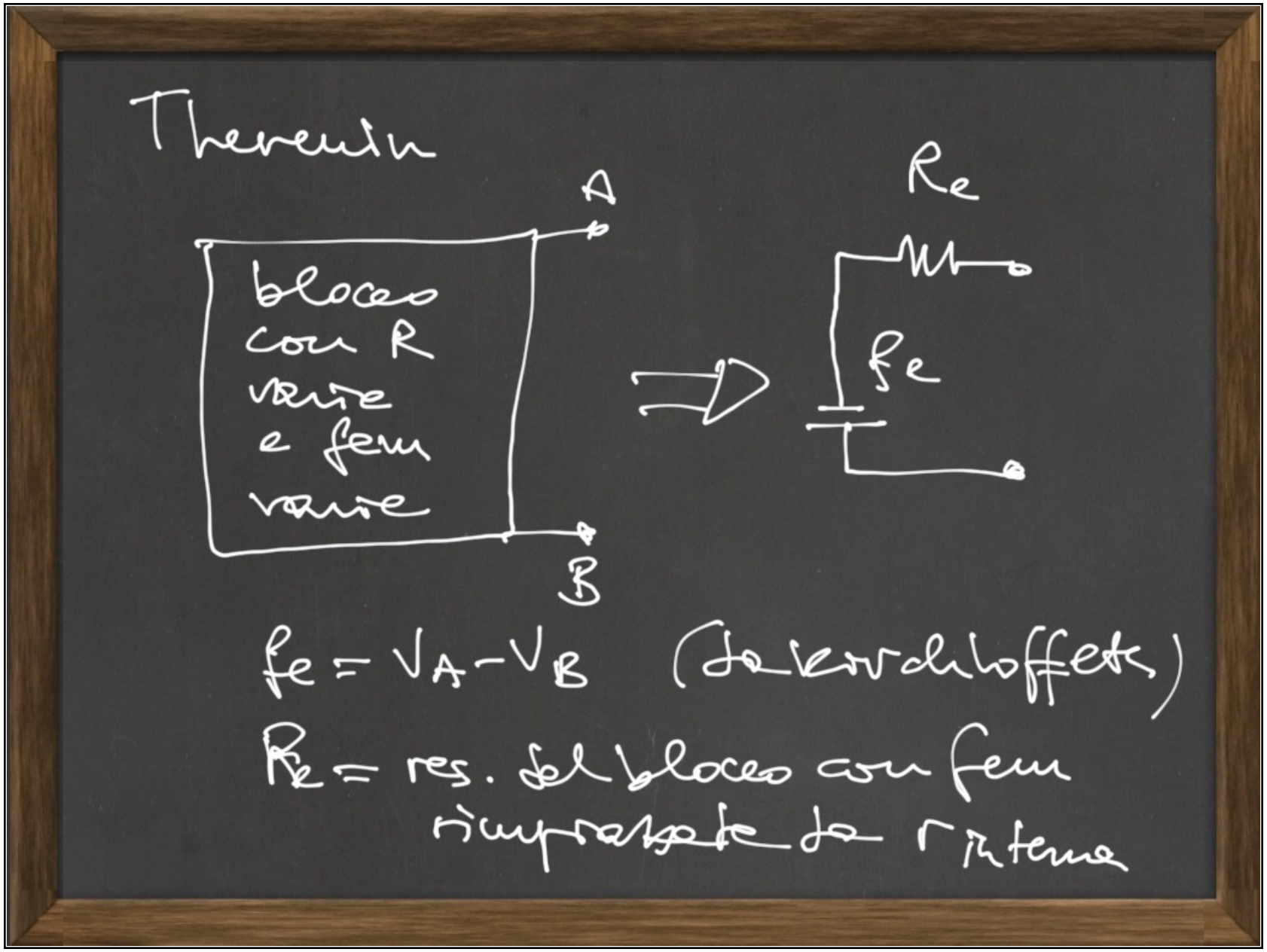


$$\mathcal{E}_1 = I_1(R_A + R_B + R_C) - I_2 R_B - I_3 R_C$$

$$-\mathcal{E}_2 + \mathcal{E}_3 = I_2(R_D + R_B) - I_1 R_B - I_3 R_D$$

$$\mathcal{E}_4 + \mathcal{E}_2 = I_3(R_C + R_D) - I_2 R_D - I_1 R_C$$

caso a 3 correnti


Thevenin
A
blocco con R varie e fem varie
B
Re
fe
fe = VA - VB (Kirchhoff)
Re = res. del blocco con fem rimpiazzate da r interna