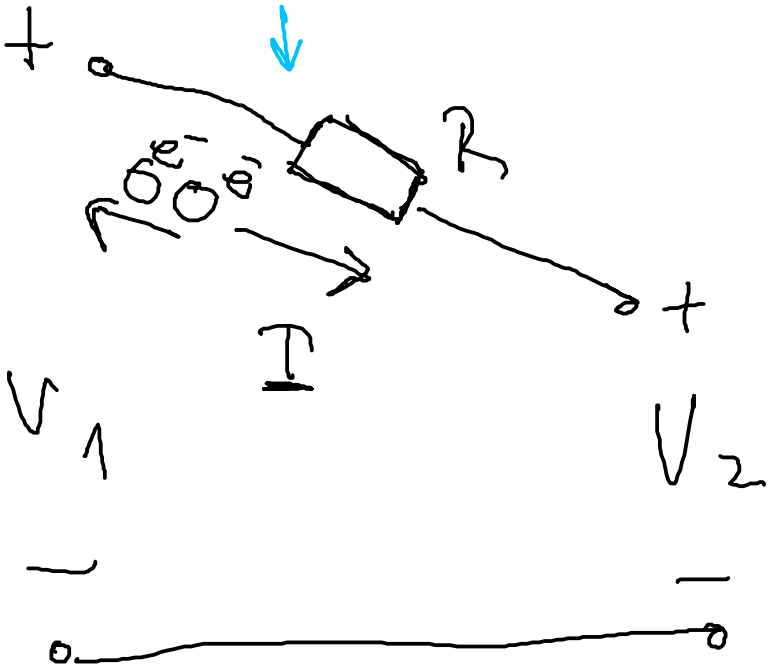
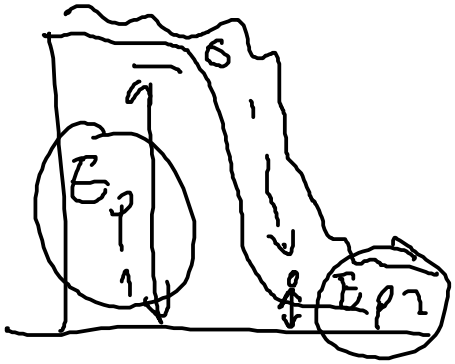
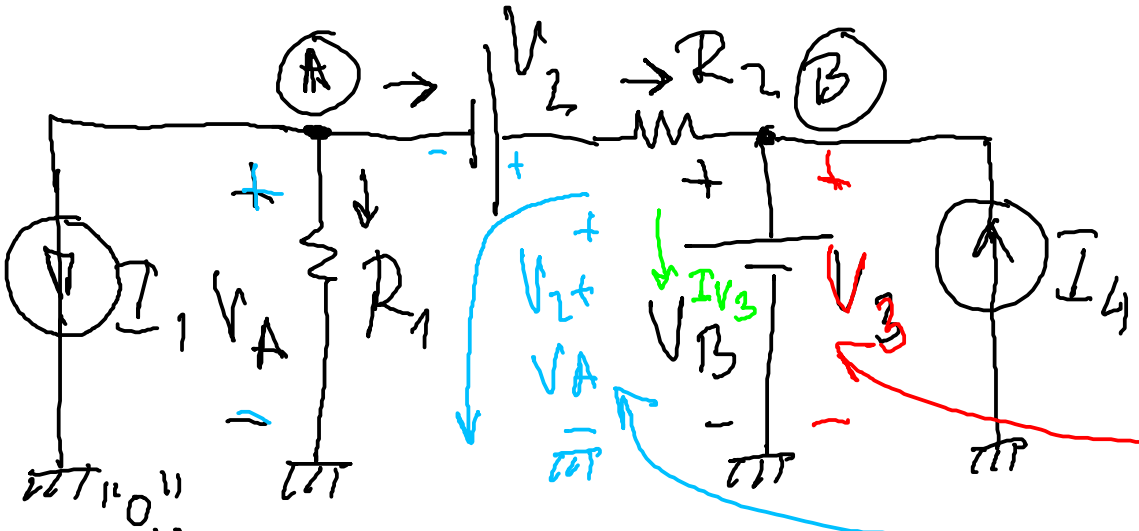
- Ohmov zakon: $I = \frac{V}{R}$ [=] $A = \frac{V}{\Omega}$ → Ohm

$I = V \cdot G$ [=] $A = V \cdot S$ → mho



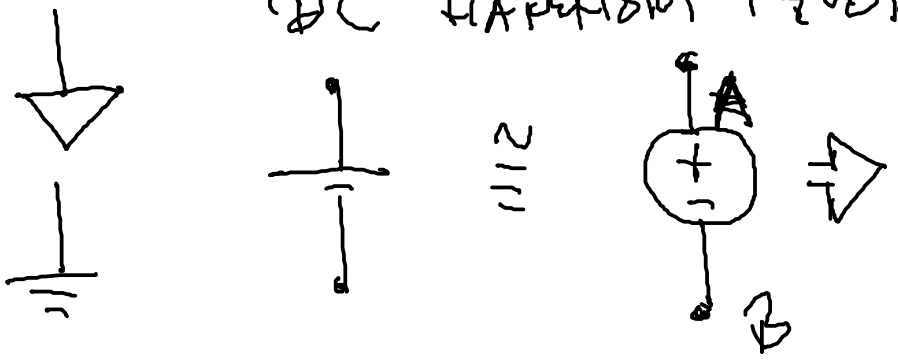
$$I = \frac{V_1 - V_2}{R}$$





KRATKI SPOJ

DC HARMONIJSKI IZVOR



$$\text{A)}\quad I_1 + \frac{V_A}{R_1} + \frac{V_A + V_2 - V_3}{R_2} = 0$$

$$\text{B)}\quad -I_4 - \frac{V_A + V_2 - V_3}{R_2} + I_{V_3} = 0$$

$$v_{AB} = V_{DC} + V_{AC}$$

(A) $I_1 + \frac{V_A}{R_1} + \frac{V_A + V_2 - V_3}{R_2} = 0$

$\Rightarrow$

(B) $-I_4 - \frac{V_A + V_2 - V_3}{R_2} + I_{V_3} = 0$

$\frac{1}{R_1} + \frac{1}{R_2} = G_1 + G_2 = \frac{1}{R_1 \| R_2}$

$\frac{R_1 + R_2}{R_1 R_2} = \frac{1}{\frac{R_1 R_2}{R_1 + R_2}}$

SLOBODNI VEKTOR

$$\begin{matrix} (A) \\ (B) \end{matrix} \begin{bmatrix} G_1 + G_2 & 0 \\ -G_3 & 1 \end{bmatrix} \begin{bmatrix} V_A \\ I_{V_3} \end{bmatrix} = \begin{bmatrix} -I_1 - (V_2 - V_3) G_2 \\ I_4 + (V_2 - V_3) G_2 \end{bmatrix}$$

$A_{2\times 2}$ — MATRICA SISTEMA

$x_{2\times 1} = b_{2\times 1}$ — VEKTOR PROMENJIVIH.

$$\begin{bmatrix} G_1+G_2 & 0 \\ -G_3 & 1 \end{bmatrix} \begin{bmatrix} V_A \\ I_{V_3} \end{bmatrix} = \begin{bmatrix} -I_1 - \underbrace{(V_2 - V_3)G_2}_{I_x} \\ I_4 + \underbrace{(V_2 - V_3)G_2}_{I_y} \end{bmatrix}$$

$$\Delta = G_2 + G_1 \qquad G_3 = \frac{1}{R_3}$$

$$V_A = \frac{\Delta V_A}{\Delta} \qquad ; \qquad \Delta V_A = \begin{vmatrix} I_x & 0 \\ I_y & 1 \end{vmatrix} = I_x$$

$$I_{V_3} = \frac{\Delta I_{V_3}}{\Delta}$$

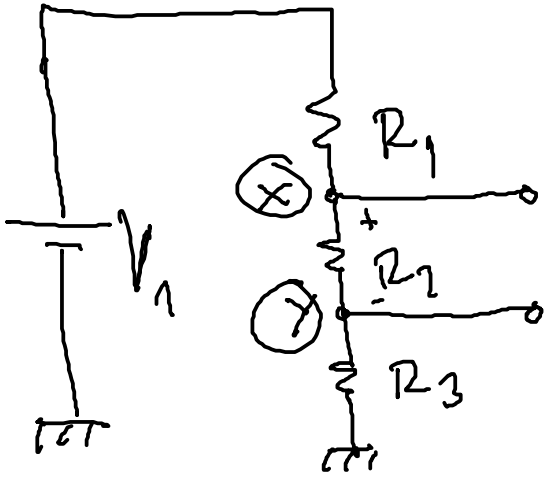
$$\frac{G_3}{G_1+G_2} = \frac{R_1 \| R_2}{R_3}$$

$$\frac{1}{G_1+G_2} = R_1 \| R_2$$

$$V_A = \frac{I_x}{G_1+G_2} = I_x \cdot (R_1 \| R_2)$$

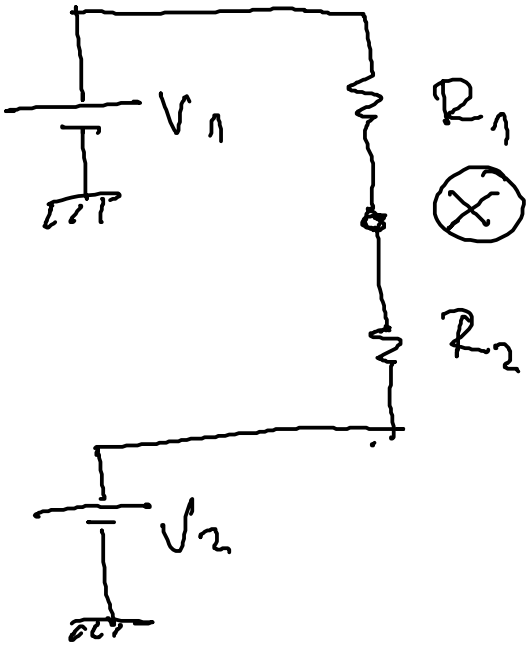
$$\Delta I_{V_3} = \begin{vmatrix} G_1+G_2 & I_x \\ -G_3 & I_y \end{vmatrix} = (G_1+G_2) I_y + G_3 I_x$$

$$I_{V_3} = I_y + \frac{G_3}{G_1+G_2} I_x = I_y + \frac{R_1 \| R_2}{R_3} \cdot I_x$$



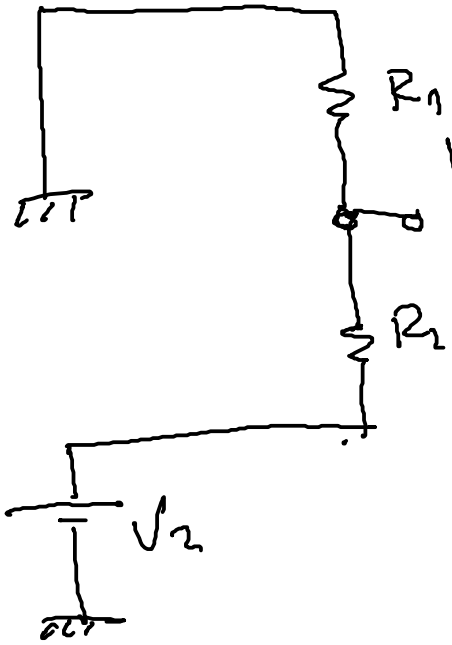
$$V_x = V_1 \cdot \frac{R_2 + R_3}{R_2 + R_3 + R_1} \quad ; \quad V_{xy} = V_{R_2} = V_x - V_y$$

$$V_y = V_1 \cdot \frac{R_3}{R_1 + R_2 + R_3}$$

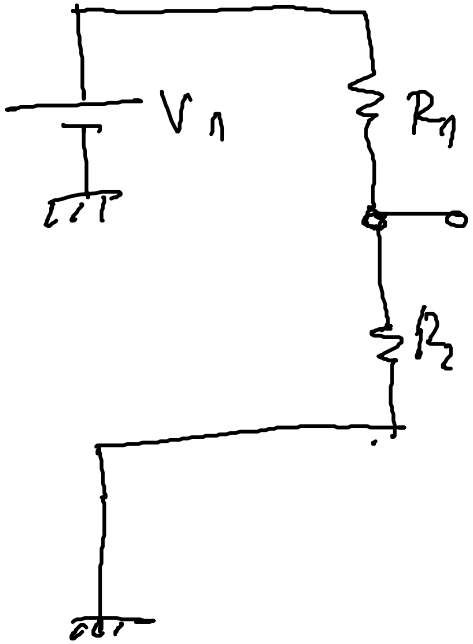


„SUPERPOZICIJA"

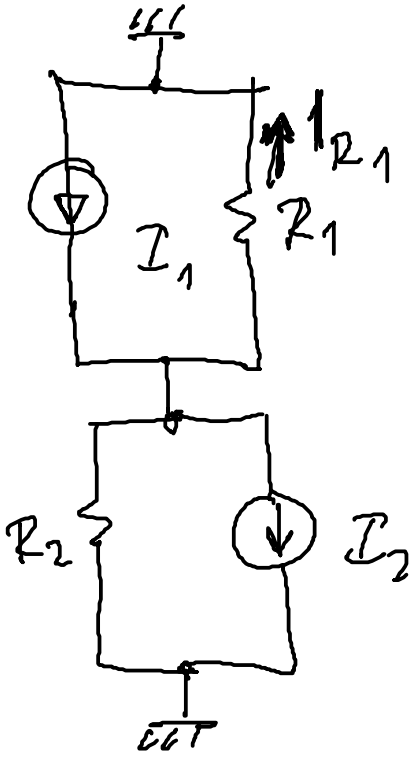
$$V_x = V_x' + V_x''$$



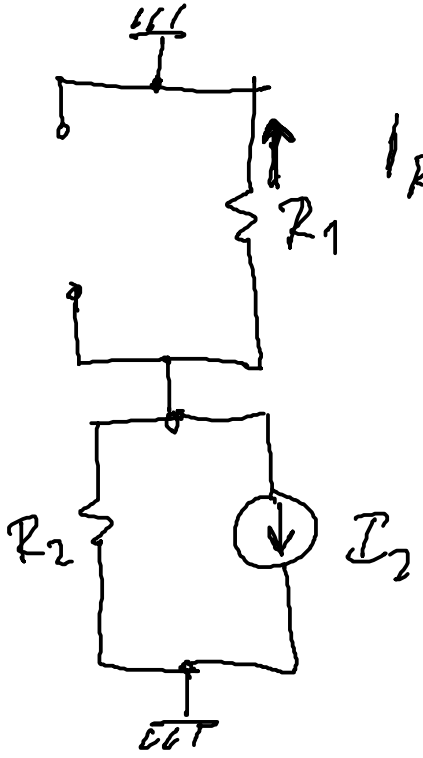
$$V_x' = \frac{R_1}{R_1 + R_2} \cdot V_2$$



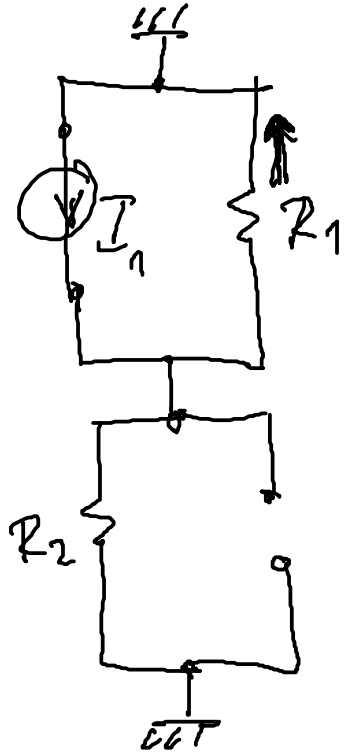
$$V_x'' = \frac{R_2}{R_2 + R_1} \cdot V_1$$



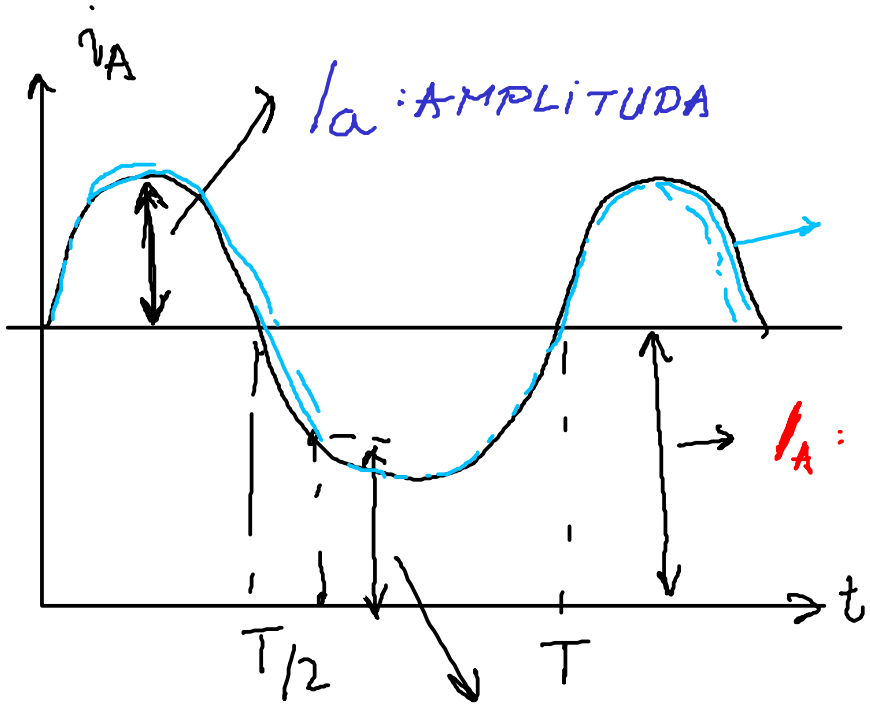
$$I_{R_1} = I'_{R_1} + I''_{R_1}$$



$$I'_{R_1} = \frac{R_2}{R_1 + R_2} \cdot I_2$$



$$I''_{R_1} = \frac{R_2}{R_1 + R_2} \cdot I_1$$



TRENUTNA VREDNOST: $i_A = \underbrace{I_A}_{DC} + \underbrace{i_a}_{AC} = I_A + I_a \cdot f(\omega t)$

DC ANALIZA: U KOLU PRISUTNI SAMO VREMENSKI NEPROMENLJIVI SIGNALI.

ANALIZA VELIKIH SIGNALA: —||— SAMO PROMENLJIVI SIGNALI VELIKIH PRIRASTAJA - AMPLITUDA (REDA NAPONA NAPAJANJA)

ANALIZA MALIH SIGNALA: —||— SAMO VREMENSKI PROMENLJIVI SIGNALI MALIH PRIRAŠTAJA - AMPLITUDA (REDA $\frac{kT}{2}$ (mV)).