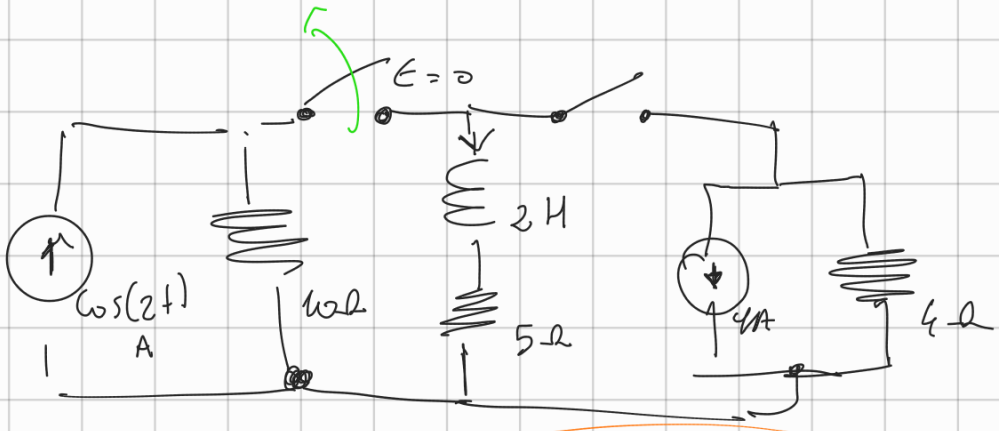
F 38



non sono uguali; stati non concordi qualunque stato-essere un Transitorio

reg. fin — v. f. completa — reg. staz.

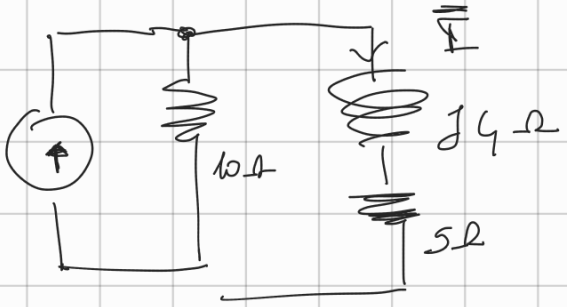
$stato_0$ 0

a $t = 0^-$

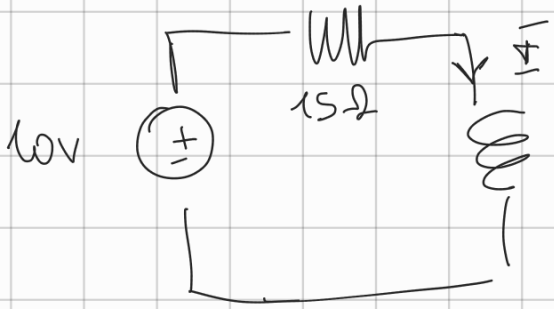
$i(0^-)$ ↓ da trovare

$i(0^+) = i(0^-)$ si conserva

circuito non leggero si conserva var. stato



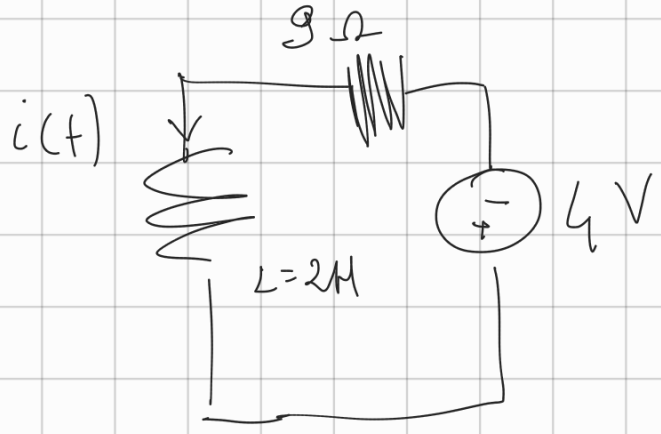
con Teorema trasformato



$\bar{I} = \frac{10}{15 + j4}$ moltr. e divido per coniugato $= 10\,\frac{10 - j4}{|4|}$ A

$$i(0^-) = \mathrm{Re}\,\bar{I} = \frac{150}{141}\ A$$

per $t > 0$, uso Tevenin (?)



$$i_{LIB}(t) = i(0^+)\, e^{-\frac{t}{\tau}}$$

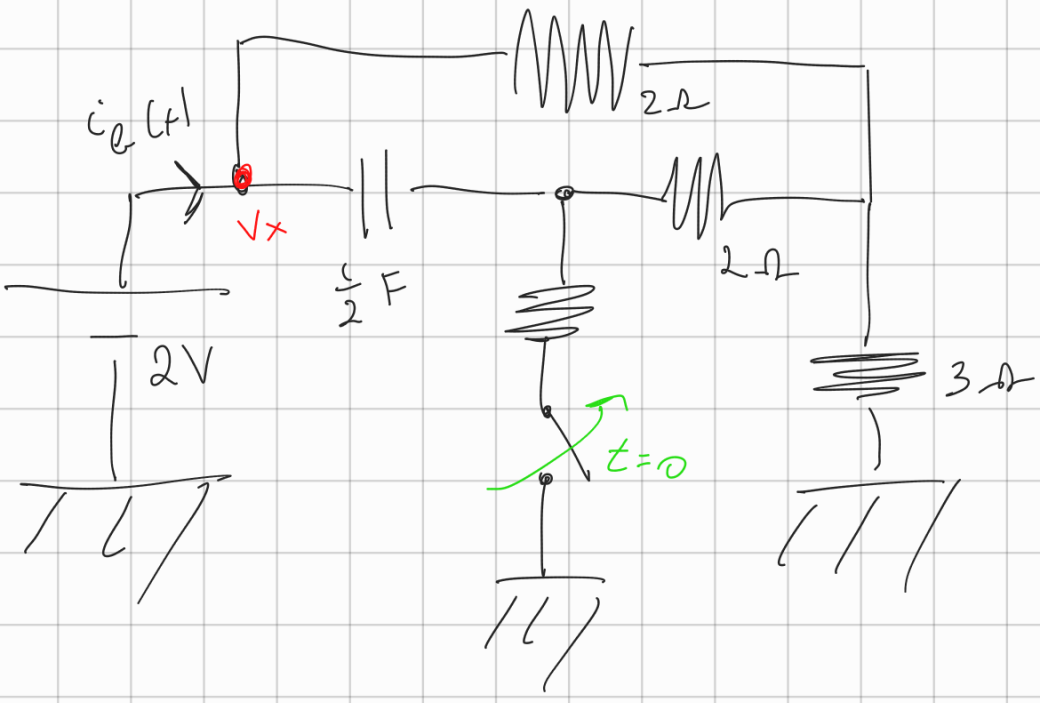
$$= \frac{150}{141} e^{-t} \qquad \tau = \frac{L}{R} = \frac{2}{9}\ sec$$

$$= \frac{150}{141} e^{-\frac{9}{2}t}\ A$$

$$i_{FORZATA} = i_{Forz}(\infty)\left(1 - e^{-\frac{t}{\tau}}\right) \qquad i_{For}(0) = 0 \text{ per dep.}$$

$$= -\frac{4}{9}\left(1 - e^{-\frac{9}{2}t}\right), \quad t \geq 0$$

Da PDF 14 **F43**



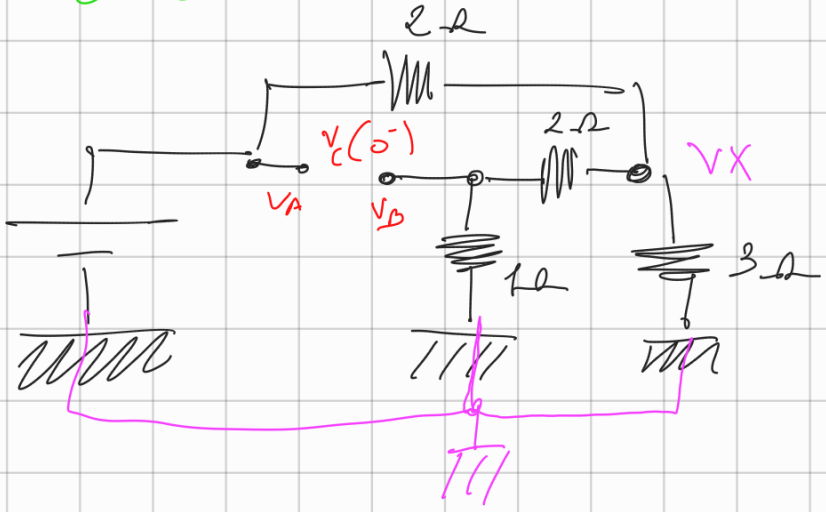
Reg. staz. 1 completa Reg. Staz. 2

$t(0^-)$ $i_b(0^-)$ non è var. di stato, sarà discontinua

$V_c(0^-) = V_c(0^+) =$

in regime staz. un condensatore è un circuito aperto

$t=0$



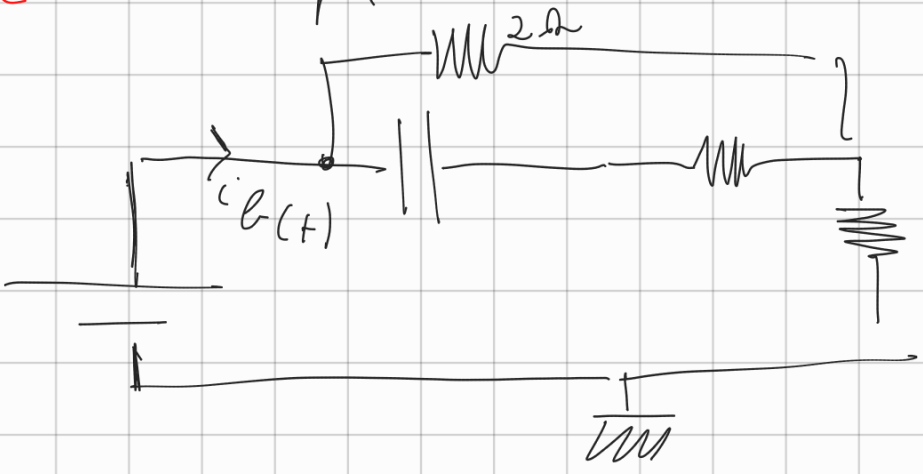
partitore di tensione

$$V_x = 2 \cdot \frac{\frac{7}{2}}{\frac{7}{2}+2} \cdot \frac{1}{3} = \frac{6}{7}$$

$$V_B = \frac{6}{7}\,\frac{1}{3} = \frac{2}{7}\ V$$

$$V_C(0^-) = 2 - \frac{2}{7} = \boxed{\frac{12}{7}\ V}$$

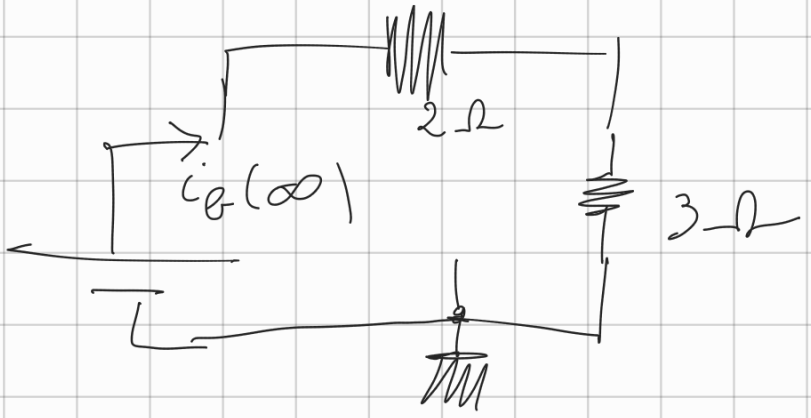
$t > 0$ si apre interruttore



Formula generale

Vale rispetto ai circuiti del primo ordine senza $\mathcal{E}$

$$i_C(t) = i_C(0^+)\,e^{-\frac{t}{\tau_{eq}}} + i_C(\infty)\left(1 - e^{-\frac{t}{\tau_{eq}}}\right)$$



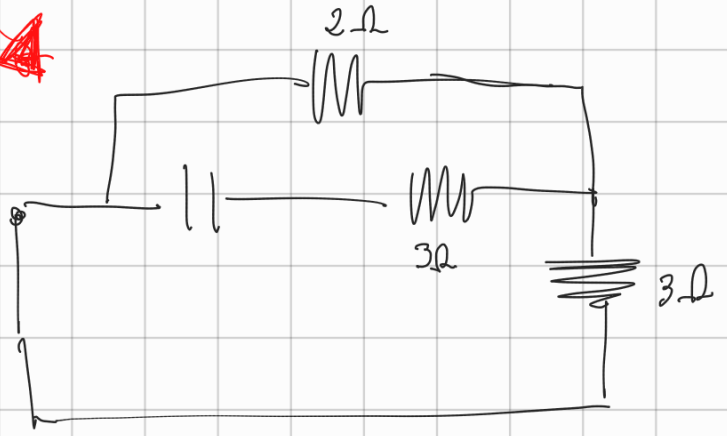
$$i_L(\infty) = \frac{2}{5}\,A$$

$$T_{eq} = C \cdot R_{eq}$$

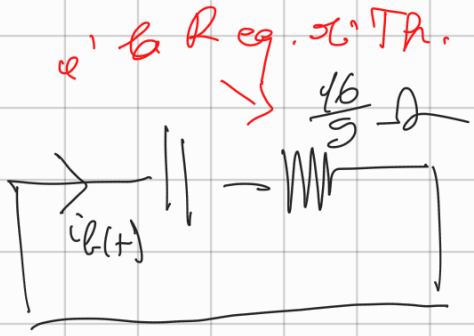
Scollego condensatore e faccio l'equivalente di Thevenin, ovvero

- Si studia la risposta libera (spegnendo il generatore)

il condensatore dunque si sposta su



$\Rightarrow$

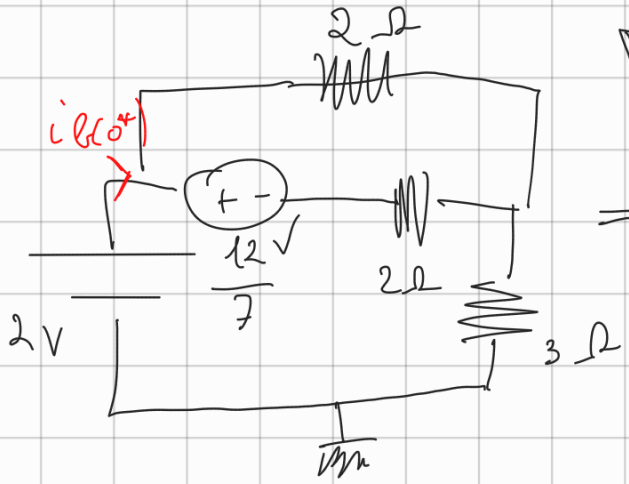


$$i_L(\infty) = \frac{2}{5}\,A \qquad T_{eq} = CR_{eq} = \frac{8}{5}$$

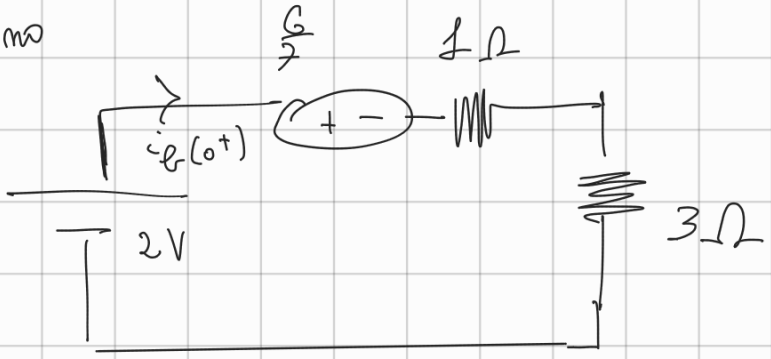
Vediamo le condizioni iniziali:

a 0^+ il condensatore è corto circuito e' come un generatore di tensione

$i_L(0^+)$!?



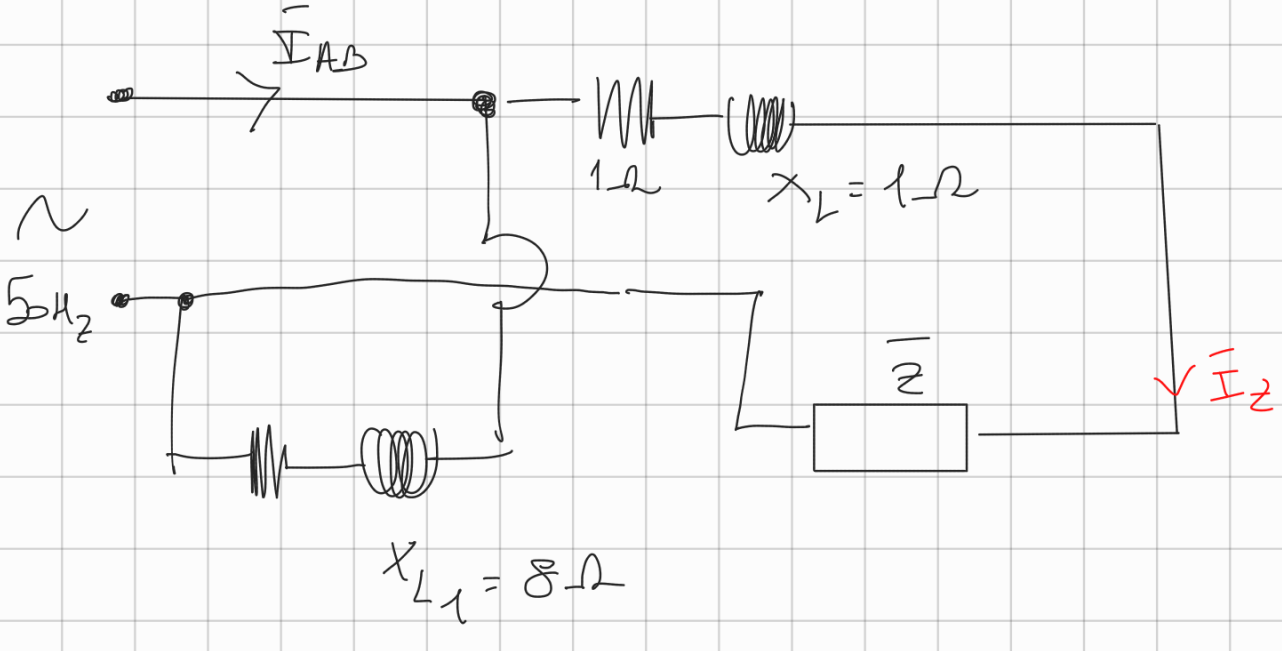
Transformo



$$i_L(0^+) = \frac{8}{7}\left(\frac{1}{4}\right) = \frac{2}{7}\ A$$

$$\Rightarrow i_L(t) = \frac{2}{7} e^{-\frac{5}{8}t} + \frac{2}{5}\left(1 - e^{-t\frac{5}{8}}\right)$$

2020/08/30



$\omega = 314 \frac{rad}{s}$ $\overline{Z}$ ohmico-induttivo

$V = 100\ V_{eff}$ $P_{max\ ist.} = 2500\ W$

- $I_2 = \frac{A}{V} = 20\ A_{eff}$

Effettuare rifasamento (0,95) ⊥ polo AB

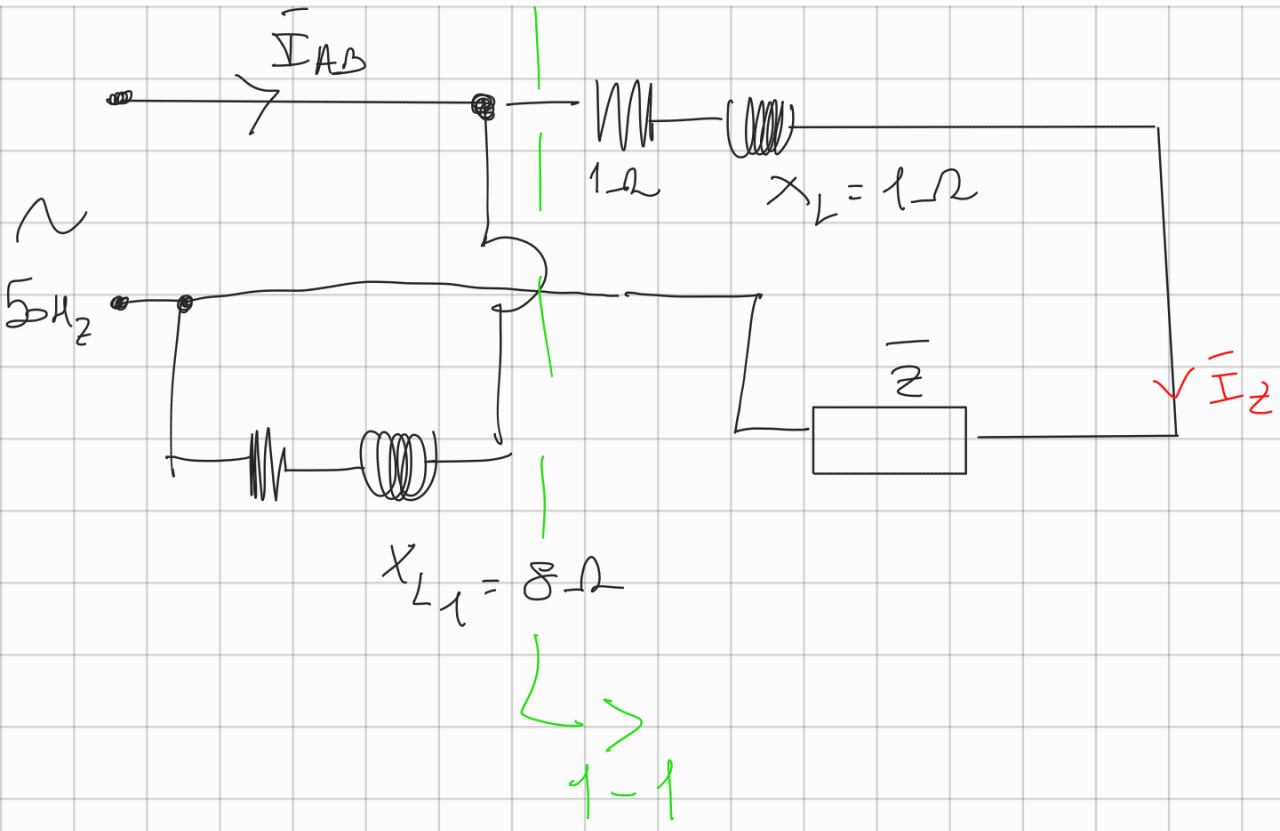
$\Rightarrow P_{max} = P + A \Rightarrow P = P_{max} - A = 2500 - 2000 = 500\ W$

$p(t) = P + A\cos(2\omega t + \varphi_v + \varphi_i)$

$P = A\cos\varphi_2$ $A = \sqrt{P^2 + Q^2}$ $Q = A\sin\varphi_2$

$Q_2 = \sqrt{A^2 - P^2} = \sqrt{2000^2 - 500^2} = 1936\ VAR$

diviso in sec. il circuito



$$P_{11} = R \cdot I_Z^2 + 500\,W = 900\,W$$

$$Q_{11} = X_L I_Z^2 + 1936 = 2336\ VAR$$

$$A_{11} = \sqrt{900^2 + 2336^2} \approx 2500\ VA$$

$$V_{11} = \frac{A_{11}}{R_Z} = \sqrt{\frac{900^2 + 2336^2}{20}} = \frac{250}{2} = 125\ V_{eff}$$

$$P_{AB} = P_{11} + 6(12,5)^2 = 1837\,W$$

$$I_Z = \frac{V_{AB}}{\ldots} \ldots : 12,5\ A_{eff}$$

$$Q_{AB} = 2336 + (8,12,5)^2 = 3586\ VAR$$

=> Rifasamento

$$C_{corr} = \frac{Q_{AB} - P_{AB} \tan\varphi_{corr}}{\omega V_{AB}^2} =$$

$$\frac{3586 - 1837}{\omega V_{AB}^2} = \frac{2382}{} = 608\mu F$$

$$\varphi_{corr} = \arccos(0,95)$$

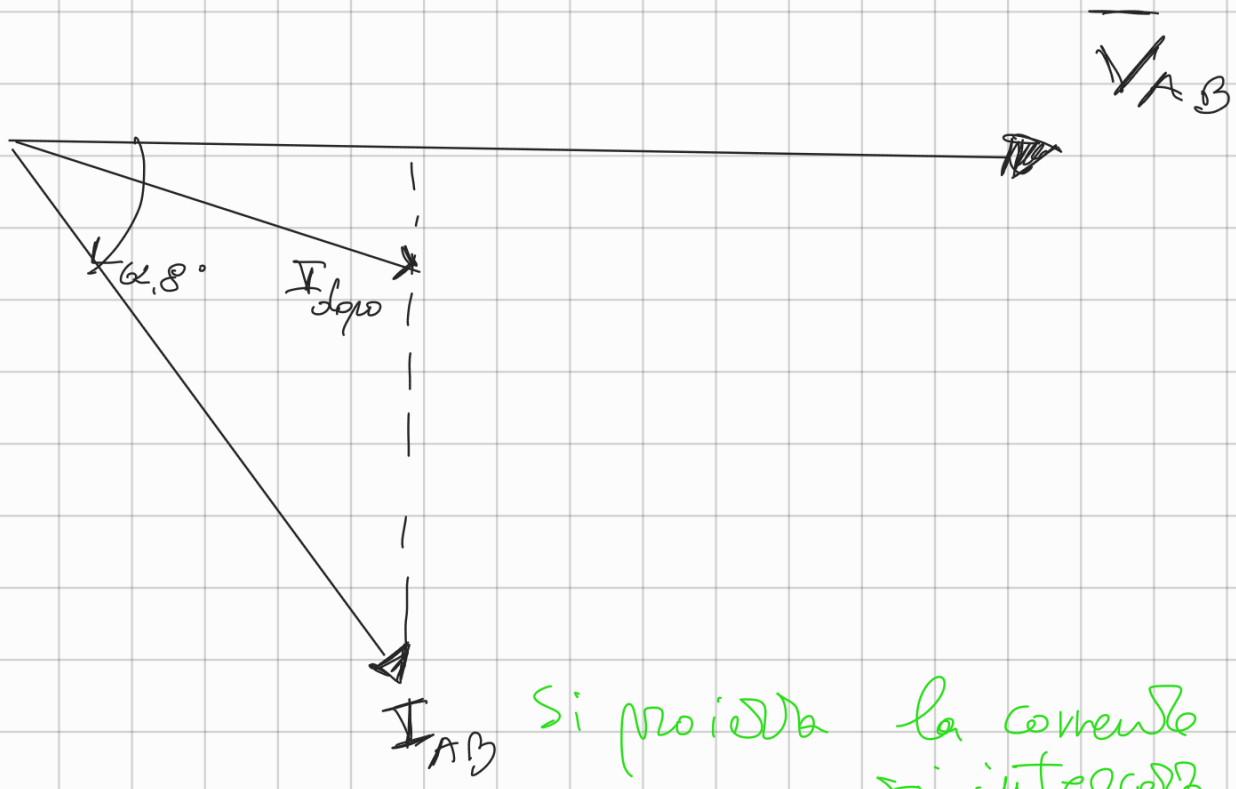
$$\tan\varphi_{corr} = \tan(\arccos(0,95))$$

$$I_{AB} = \frac{A_{AP}}{V_{AB}} = \frac{4025}{125} = 32,2\ A_{eff}$$

$$\cos\varphi_{AB} = \frac{P_{ATT}}{P_{APP}} = \frac{P_{AB}}{A_{AB}}$$

↳ φ_{AB} $\cos(\varphi_{AB}) = 62,8°$ potrebbe è $0,46$

- $\varphi_{cosfi} = \arccos(0,95) =$



Si proietta la corrente e si interseca a 18°

$$I_{AB\ dopo} = \frac{A_{AB\ dopo}}{V_{AB}} = \frac{P_{AB}}{0,95 \cdot V_{AB}} = \frac{1933}{0,95} = 15,5\ A$$

$$A_{AB\text{-}dopo} = \frac{P_{AB}}{\cos\varphi_{cosfi}} = 1933\ V.A$$

$$\cos\varphi_{cosfi} = 0,95 = \frac{P_{AB}}{A_{AB\ dopo}}$$

Da compito 2020-03-15

Per l'attività e realizzata,

ore 2:35 registrazione tablet

22/09/23