Atividade I

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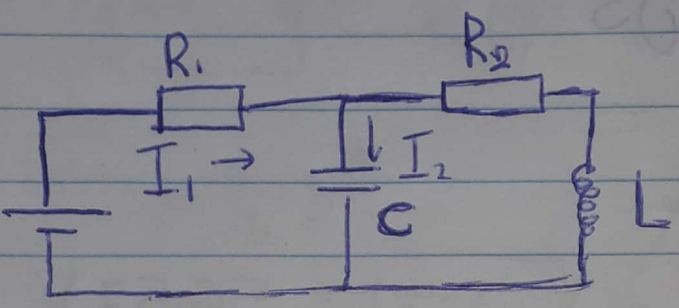
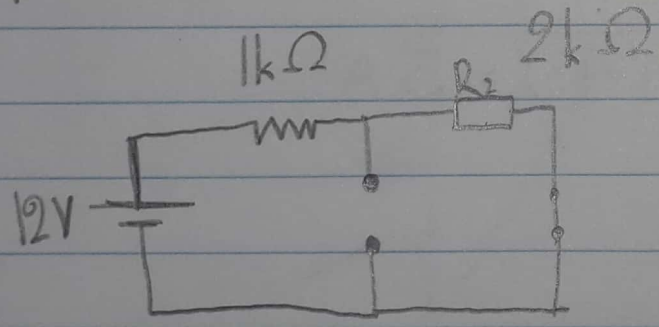
18.004177-6

1-



$V = 12V$
$R_1 = 1k\Omega$
$R_2 = 2k\Omega$
$L = 1H$
$C = 0,FF$

$t \to \infty$



$$I_1 = \frac{12}{3 \times 10^3} = 4mA$$

$$I_2 = 0$$

2- $\dot{V} = 40 - j40$

$\dot{I} = 4 + j3$

a)

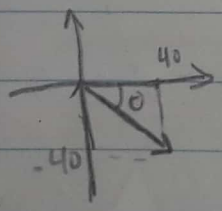
$V_{ef} = |\dot{V}| = \sqrt{40^2 + (-40)} = 56,57\ V$

$I_{ef} = |\dot{I}| = \sqrt{4^2 + (3)^2} = 5\ A$

b)

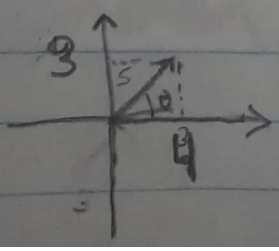
$\dot{Z} = \frac{\dot{V}}{\dot{I}} = \frac{40 - j40}{4 + j3} = \frac{56,57\angle -45}{5\angle 37} = 11,31\angle -82\ \Omega$

$40 - j40$

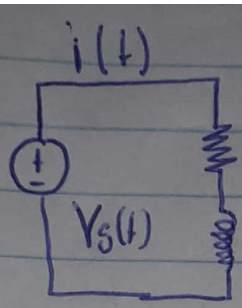


c) Pela fase ser -82 ele é um bipolo capacitivo

$4 + j3$



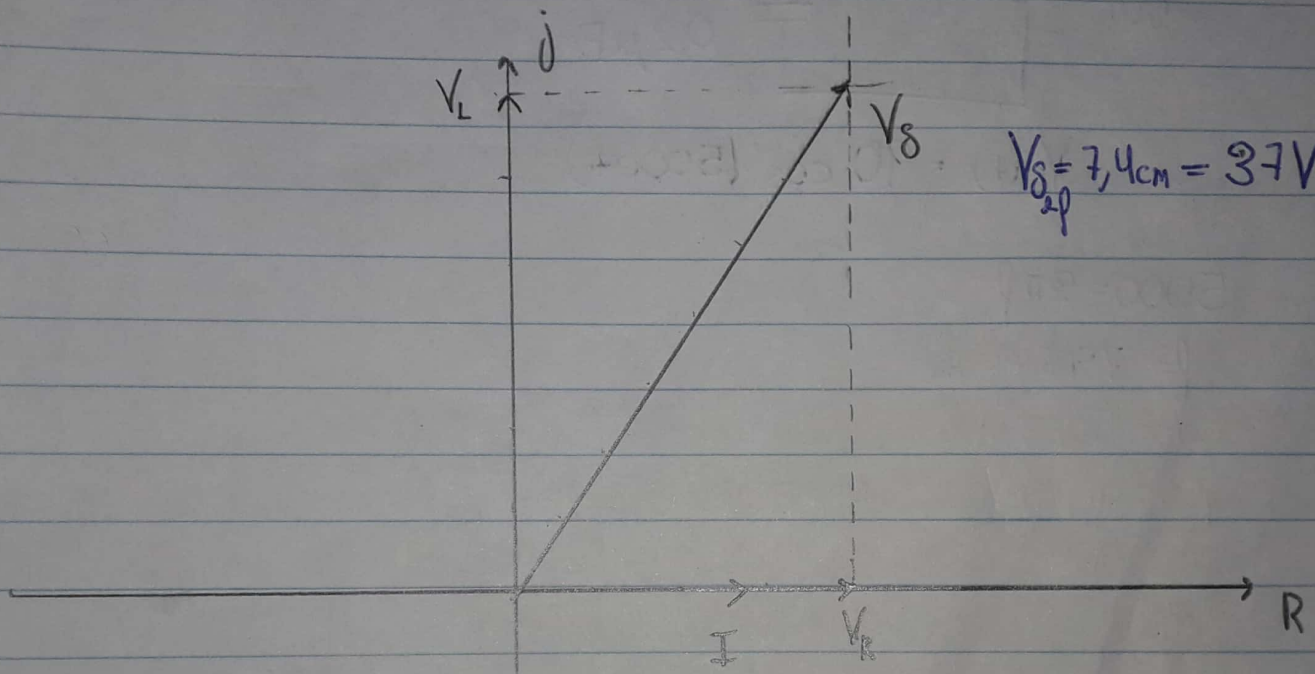
3)



Escala: 1cm = 5V

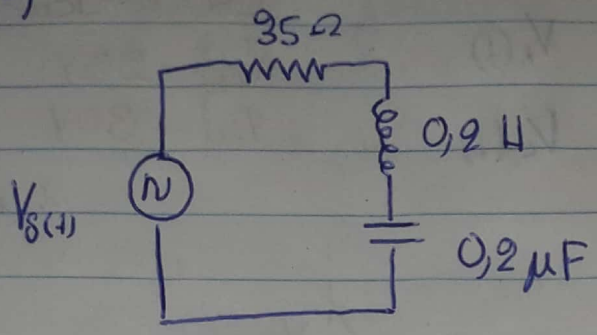
V_{Ref} = 20V

V_{ief} = 30V



$V_{S_{ap}} = 7{,}4\,cm = 37V$

4-)



$V_s(t) = 90 \cos(5000t)$

$5000 = 2\pi f$

$f = 795{,}77\ Hz$

$\omega = 5000\ rad/s$

$V_s = \frac{90}{\sqrt{2}} \angle 0 = 45\sqrt{2} \angle 0$

$Z_L = j\omega L = 5000j\,0{,}2 = 1000j = 1000 \angle 90$

$Z_C = \frac{1}{5000Cj} = \frac{1}{1000j} = -\frac{j}{1000} = 1000 \angle -90$

$R = 35 \angle 0$

$I_1 = \frac{45\sqrt{2} \angle 0}{35 \angle 0 + 1000 \angle 90 + 1000 \angle -90} = 1{,}82\ A$

$\dot{V}_{C_1} = \frac{1{,}82 \angle 0}{1000 \angle -90} = 1{,}82 \times 10^3 \angle -90$

c) $V_C(t) = 1{,}82 \times 10^3 \sqrt{2} \cos(5000t - 90)$