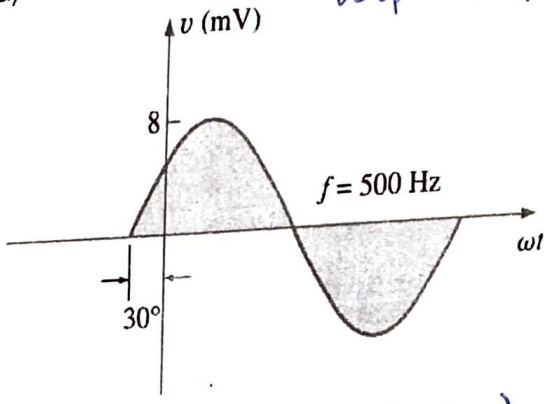
INSTITUTO FEDERAL DE EDUCAÇÃO, CIÊNCIA E TECNOLOGIA CEARÁ	Aluno: PABLO BUSATTO	Nº	V.S. Verificação
	Curso: TELEMÁTICA	Turno: NOITE Turma:	
Professor: Morais	Disciplina: ELETRICIDADE CA		Nota: 10,0

2,5 1. Encontre a expressão para as senóides mostradas abaixo:

a)

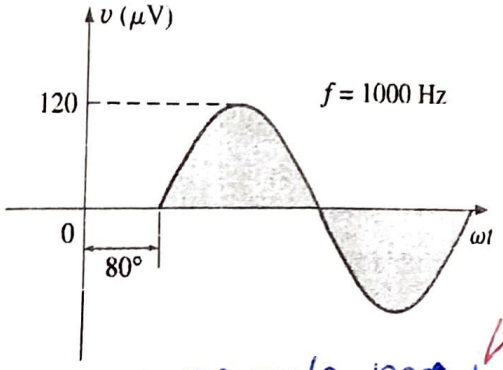
$v = V_p \cdot \text{SEN}(2\pi f t + \theta)$



$v = 8 \cdot \text{SEN}(2\pi(500\,\text{Hz})t + 30°)$ mV

$v = 8\,\text{SEN}(1000\pi t + 30°)$ mV ✓

b)

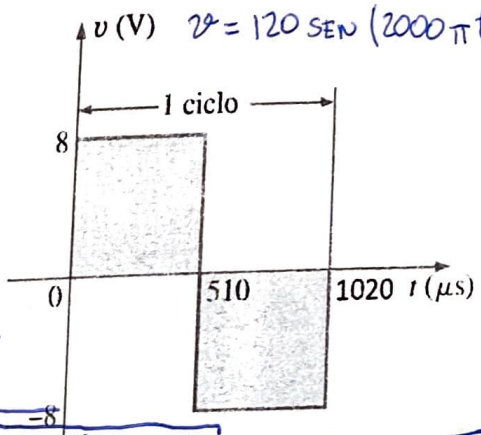


$v = 120\,\text{SEN}(2\pi \cdot 1000\,t - 80°)\,\mu V$ ✓

$v = 120\,\text{SEN}(2000\pi t - 80°)\,\mu V$

2,5 2. a) Encontre o Valor Médio do sinal ao lado.

b) Encontre o Valor Eficaz do sinal ao lado.



$V_{cc} = \dfrac{(8V)(510\,\mu s) + (-8V)(510\,\mu s)}{1020\,\mu s}$

$V_{cc} = 0\,V$

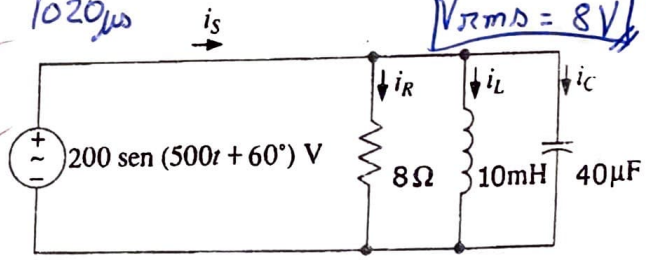
$V_{rms} = \sqrt{\dfrac{(8V)^2(510\,\mu s) + (-8V)^2(510\,\mu s)}{1020\,\mu s}} \Rightarrow V_{rms} = \sqrt{64V^2} \Rightarrow V_{rms} = 8\,V$ ✓

2,5 3. a) Encontre I_S para o circuito ao lado.

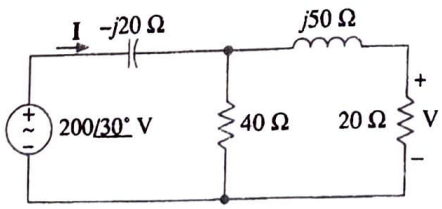
$i_S = 30{,}99 \angle 4{,}78°\,A$ ✓

b) Encontre I_L.

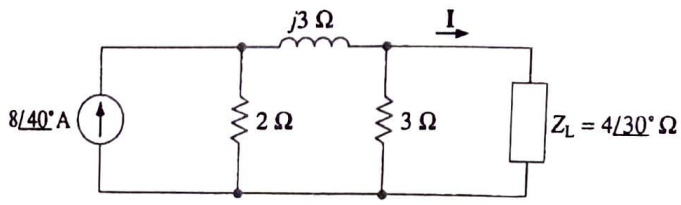
$i_L = 28{,}28 \angle -30{,}00°\,A$ ✓



4. Qual a corrente I e a tensão V do circuito abaixo:



2,5 5. Qual a corrente I do circuito abaixo:



$I = 1{,}41 \angle -19{,}49°\,A$ ✓

$$Z_T = \frac{1}{\frac{1}{Z_R} + \frac{1}{Z_L} + \frac{1}{Z_C}}$$

$$Z_T = \frac{1}{\frac{1}{8\angle 0^\circ} + \frac{1}{5\angle 90^\circ} + \frac{1}{50\angle -90^\circ}}\ \Omega$$

$Z_R = 8\ \Omega$

$Z_L = \omega L \angle 90^\circ$

$Z_L = (500\ rad./s)(10\ mH)\angle 90^\circ$

$Z_L = 5\angle 90^\circ\ \Omega$

$Z_C = \frac{1}{\omega C}\angle -90^\circ$

$Z_C = \frac{1}{(500\ rad./s)(40\ \mu F)}\angle -90^\circ$

$Z_C = 50\angle -90^\circ\ \Omega$

$Z_T = 4{,}56\angle 55{,}22^\circ\ \Omega$

$E = 100\sqrt{2}\angle 60^\circ$

$i_S = \frac{E}{Z_T} \Rightarrow$

$i_S = \frac{100\sqrt{2}\angle 60^\circ}{4{,}56\angle 55{,}22^\circ} \Rightarrow$

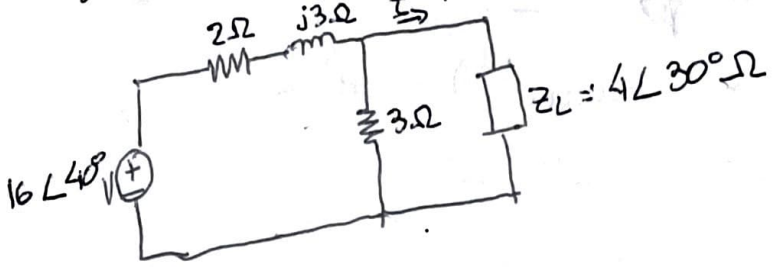
$\boxed{i_S = 30{,}99\angle 4{,}78^\circ\ A}$

$i_L = \frac{E}{Z_L} \Rightarrow$

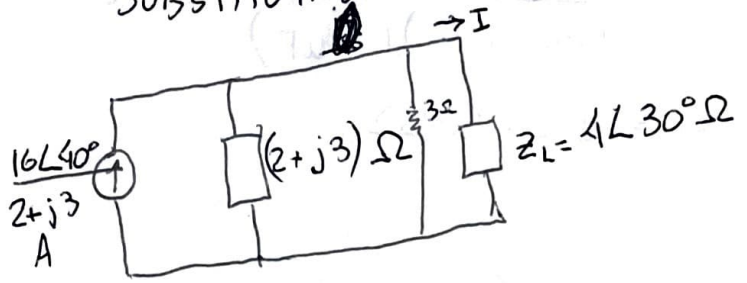
$i_L = \frac{100\sqrt{2}\angle 60^\circ}{5\angle 90^\circ}\ A \Rightarrow$

$\boxed{i_L = 28{,}28\angle -30{,}00^\circ}$

5. FAZENDO SUBSTITUIÇÃO DA FONTE DE CORRENTE POR FONTE DE TENSÃO:



SUBSTITUINDO NOVAMENTE A FONTE:



$$Z_T = 1,27\angle 26,82°\,\Omega$$

$$I_T = \frac{16\angle 40°}{2+j3}\ A$$

$$I_T = 4,44\angle -16,31°\ A$$

$$I_* = I_T \cdot \frac{Z_T}{Z_L}$$

$$I = (4,44\angle -16,31°\ A)\,\frac{(1,27\angle 26,82°\,\Omega)}{(4\angle 30°\,\Omega)}$$

$$\boxed{I = 1,41\angle -19,49°\ A}$$