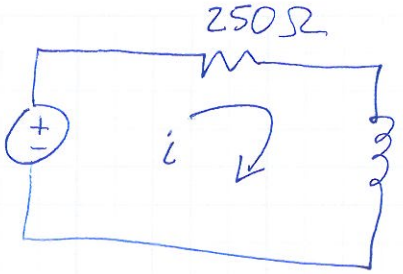
(8)



$10\sin(500t) \rightarrow 10\cos(500t - 90^\circ) \rightarrow 10\angle -90^\circ$

$L = 0.41\ H \rightarrow j205$

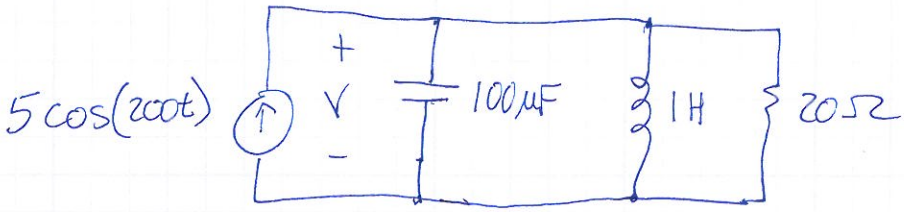
$Z_{eq} = 250 + j205 = 323.3\angle 39.35^\circ$

$$i = \frac{V}{Z} = \frac{10\angle -90^\circ}{323.3\angle 39.35}$$

$$= 0.031\angle -129.35 \text{ amps}$$

phase angle

(9)



$Z_C = \frac{1}{j200 \cdot 100\mu} = -j50$

$Z_L = j200 \cdot 1 = j200$

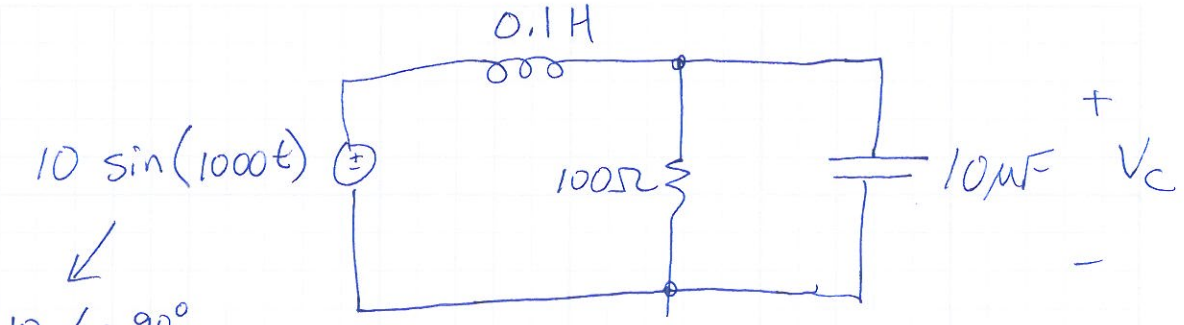
$$Z_{eq} = Z_C \,||\, Z_L \,||\, R = \frac{1}{\frac{1}{Z_C} + \frac{1}{Z_L} + \frac{1}{R}} = \frac{1}{j\frac{1}{50} - j\frac{1}{200} + \frac{1}{20}}$$

$$= \frac{1}{\frac{1}{20} + j\frac{3}{200}} = \frac{200}{10 + j3} = 19.16\angle -16.7^\circ$$

$V = 5\angle 0^\circ \cdot 19.16\angle -16.7^\circ$

$= 95.8\angle -16.7^\circ$

10



$10 \sin(1000t) \rightarrow 10 \angle -90^\circ$

$Z_L = j100$

$Z_C = \frac{1}{j\,10^3 \cdot 10 \cdot 10^{-6}}$

$= -j100$

$$\frac{10\angle -90^\circ - V_c}{j100} = \frac{V_c}{100} + \frac{V_c}{-j100}$$

$$\frac{10\angle -90^\circ - V_c}{1\angle 90^\circ} = V_c + \frac{V_c}{1\angle -90^\circ}$$

$$10\angle -180^\circ = V_c\left(\frac{1}{1\angle 90^\circ} + 1 + \frac{1}{1\angle -90^\circ}\right)$$

$$= V_c\left(-j + 1 + j\right)$$

$$\boxed{V_c} = \underbrace{10\angle -180^\circ}_{\text{amplitude}}$$