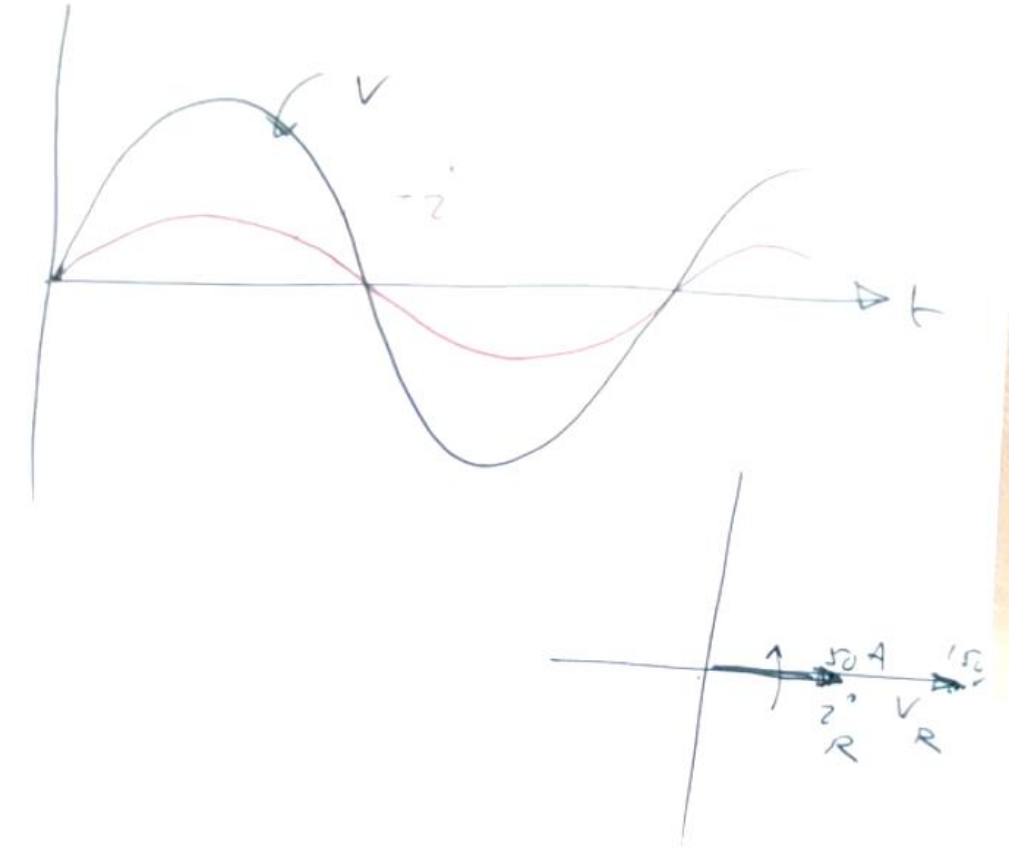
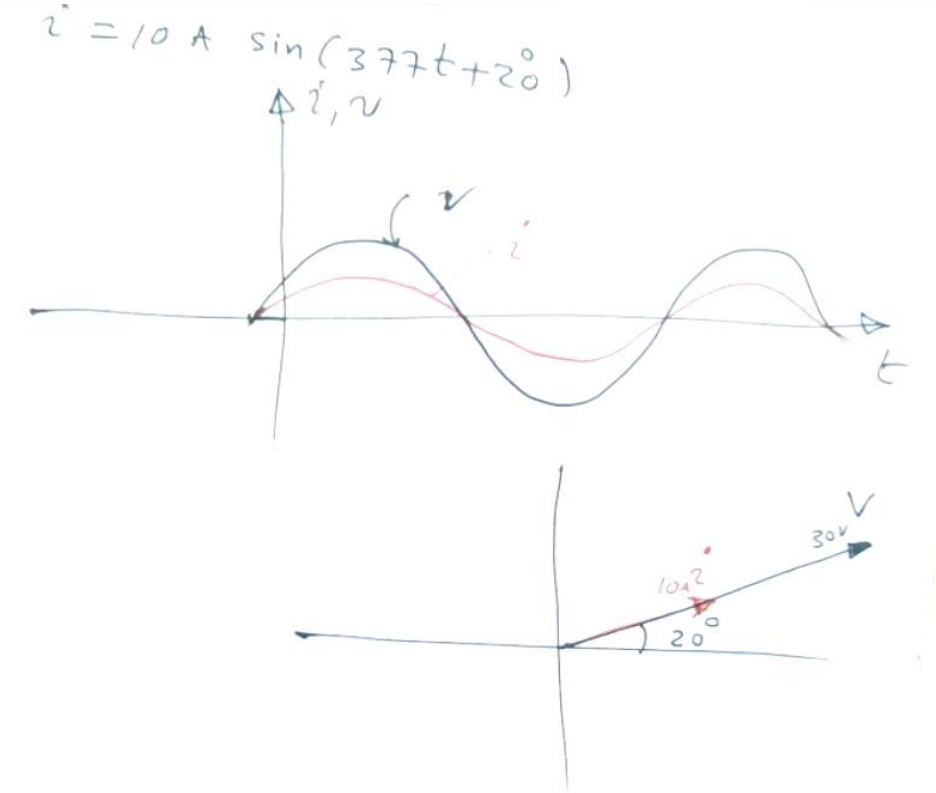
Attribution Nidhal Abdulaziz

In class tutorial 8 additional solutions

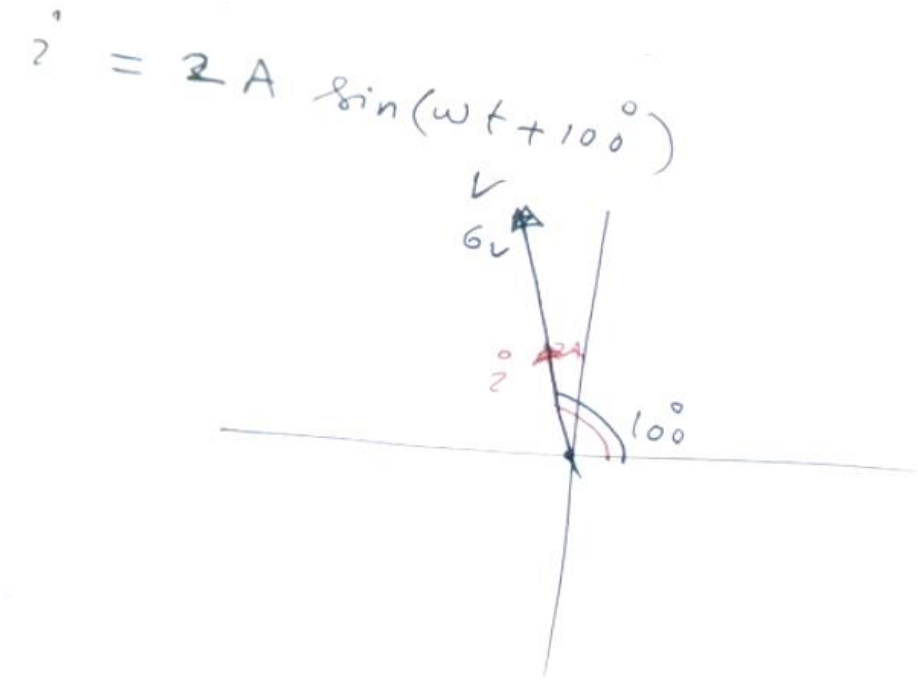
Question 3a



Question 3b



Question 3c



Question 3d

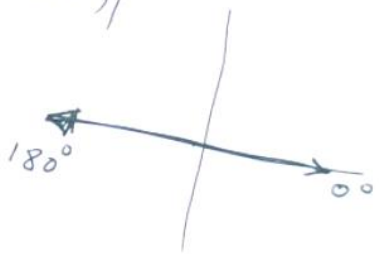
Q.3 (d)

$v = -12 \sin(\omega t + 40^\circ)$

$v = 12(\sin(\omega t + 40^\circ + 180^\circ))$

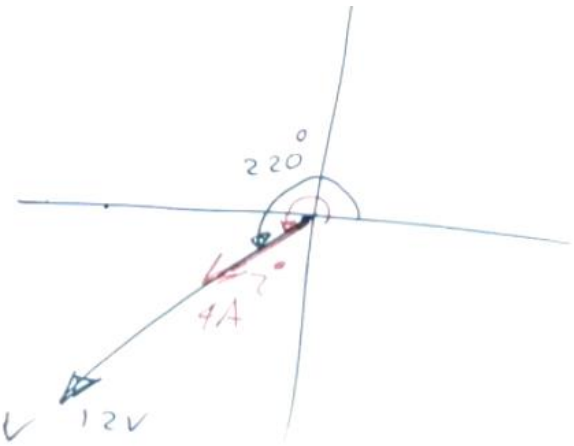
$= 12 v \sin(\omega t + 220^\circ)$

$i = v/R$



$i = \frac{12V}{3\Omega} \sin(\omega t + 220^\circ)$

$= 4A \sin(\omega t + 220^\circ)$



Question 5a

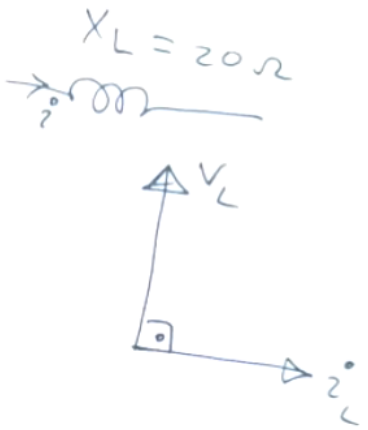
Q. 5

(a) $i = 5 \sin \omega t$

$V = i \times X_L$

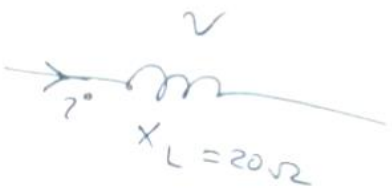
$V = 20 \times 5 \sin(\omega t + 90^\circ)$

$V = 100\,V \sin(\omega t + 90^\circ)$



Question 5c

Q.5 (c)



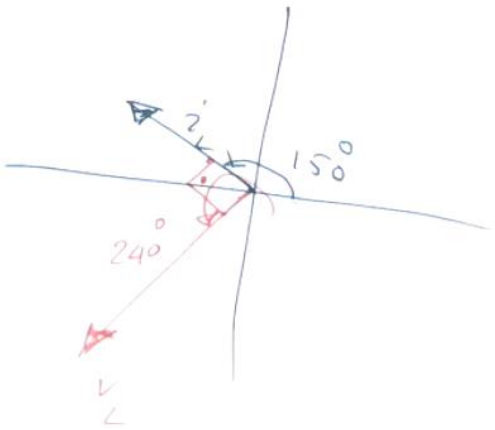
$i = 6 \sin(\omega t - 30^\circ)$

$i = 6 \sin(\omega t - 30^\circ + 180^\circ) = 6 \sin(\omega t + 150^\circ)$

$V = i \times X_L$

$V = 20\Omega \times 6\,A \sin(\omega t + 150^\circ + 90^\circ)$

$V = 120\,V \sin(\omega t + 240^\circ)$



Question 6a

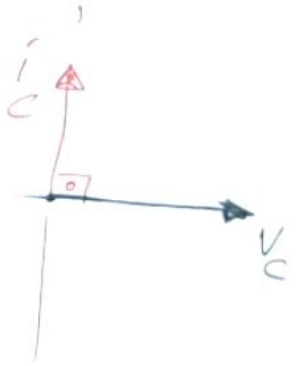
Q. 6

$X_C = 2.5\,\Omega$

$V_C = 120 \sin \omega t$

$$i_C = \frac{V_C}{X_C} = \frac{120\,V}{2.5\,\Omega} \sin(\omega t + 90^\circ)$$

$$i_C = 48\,A \sin(\omega t + 90^\circ)$$



Question 6b

(b) $V_C = 4 \times 10^{-3} \sin(\omega t + 40^\circ)$

$$i_C = \frac{4 \times 10^{-3}\,(V)}{2.5\,(\Omega)} \sin(\omega t + 40^\circ + 90^\circ)$$

$$i_C = 1.6 \times 10^{-3} \sin(\omega t + 130^\circ)$$