

Tutorial - 1-02-h

Question 1 (14-46)

46. Perform the following operations (express your answers in rectangular form):

a.
$$\frac{(4 + j3) + (6 - j8)}{(3 + j3) - (2 + j3)}$$

b.
$$\frac{8 \angle 60^\circ}{(2 \angle 0^\circ) + (100 + j100)}$$

Question 2 (14-47)

47. a. Determine a solution for x and y if

$$(x + j4) + (3x + jy) - j7 = 16 \angle 0^\circ$$

b. Determine x if

$$(10 \angle 20^\circ)(x \angle -60^\circ) = 30.64 - j25.72$$

Question 3 (14-49)

49. Express the following phasor currents and voltages as sine waves if the frequency is 60 Hz:

a. $\mathbf{I} = 40 \text{ A} \angle 20^\circ$ b. $\mathbf{V} = 120 \text{ V} \angle 0^\circ$

c. $\mathbf{I} = 8 \times 10^{-3} \text{ A} \angle 120^\circ$ d. $\mathbf{V} = 5 \text{ V} \angle 90^\circ$

Question 4 (14-51)

51. For the system of Fig. 14.80, find the sinusoidal expression for the unknown current i_1 if

$$i_s = 20 \times 10^{-6} \sin(\omega t + 90^\circ)$$

$$i_2 = 6 \times 10^{-6} \sin(\omega t - 60^\circ)$$

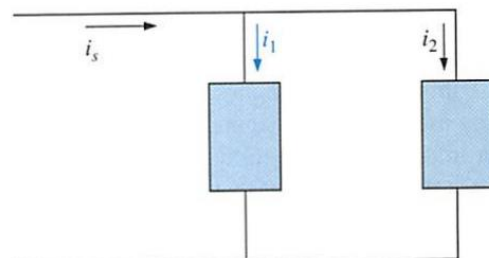


FIG. 14.80
Problem 51.

Question 5 (15-3)

3. Find the voltage v for the elements of Fig. 15.119 using complex algebra. Sketch the waveforms of v and i on the same set of axes.

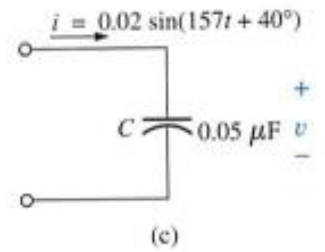
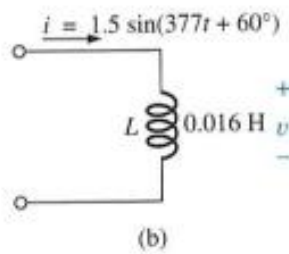
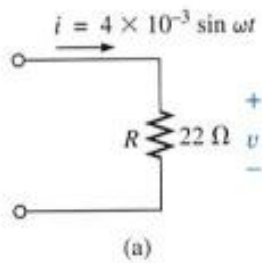


FIG. 15.119
Problem 3.