

9.59 Can be achieved by the RL circuit shown in Fig. E.19.

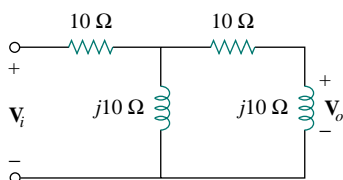


Figure E.19 For Prob. 9.59.

9.61 (a) 140.2° , (b) leading, (c) 18.43 V

9.63 1.8 k Ω , 0.1 μ F

9.65 104.2 mH

9.67 Proof

9.69 $38.21 \angle -8.975^\circ \Omega$

9.71 2 mH

9.73 235 pF

Chapter 10

10.1 $15.73 \cos(t + 247.9^\circ)$ V

10.3 $3.835 \cos(4t - 35.02^\circ)$ V

10.5 $6.154 \cos(10^3 t + 70.26^\circ)$ V

10.7 $35.74 \sin(1000t - 116.6^\circ)$ A

10.9 $7.906 \angle 43.49^\circ$ A

10.11 $10.58 \angle -112.4^\circ$ A

10.13 $16.64 \angle 56.31^\circ$ V

10.15 (a) $1, 0, -\frac{j}{R} \sqrt{\frac{L}{C}}$, (b) $0, 1, \frac{j}{R} \sqrt{\frac{L}{C}}$

10.17
$$\frac{\mathbf{V}_s(R + j\omega L + 1/j\omega C_2)}{(1/j\omega C_1 + 1/j\omega C_2)(R + j\omega L + 1/j\omega C_1) + 1/\omega^2 C_1 C_2},$$

$$\frac{\mathbf{V}_s/j\omega C_2}{(1/j\omega C_1 + 1/j\omega C_2)(R + j\omega L + 1/j\omega C_1) + 1/\omega^2 C_1 C_2}$$

10.19 $6.154 \cos(10^3 t + 70.25^\circ)$ V

10.21 $4.67 \angle -20.17^\circ$ A, $1.79 \angle 37.35^\circ$ A

10.23 $2.179 \angle 61.44^\circ$ A

10.25 $7.906 \angle 43.49^\circ$ A

10.27 $1.971 \angle -2.1^\circ$ A

10.29 $3.35 \angle 174.3^\circ$ A

10.31 $9.902 \cos(2t - 129.17^\circ)$ A

10.33 $10 + 21.45 \sin(2t + 26.56^\circ) + 10.73 \cos(3t - 26.56^\circ)$ V

- 10.35** $0.1 + 0.217 \cos(2000t + 134.1^\circ) - 1.365 \sin(4000t + 14.21^\circ)$ A
- 10.37** $3.615 \cos(10^5 t - 40.6^\circ)$ V
- 10.39** $5.238 \angle 17.35^\circ$ A
- 10.41** (a) $Z_N = Z_{Th} = 22.63 \angle -63.43^\circ \Omega$, $V_{Th} = -50 \angle 30^\circ$ V,
 $I_N = 2.236 \angle 273.4^\circ$ A, (b) $Z_N = Z_{Th} = 10 \angle 26^\circ \Omega$,
 $V_{Th} = 33.92 \angle 58^\circ$ V, $I_N = 3.392 \angle 32^\circ$ A
- 10.43** $Z_N = Z_{Th} = 21.633 \angle -33.7^\circ \Omega$, $V_{Th} = 107.3 \angle 146.56^\circ$ V,
 $I_N = 4.961 \angle -179.7^\circ$ A
- 10.45** $15.73 \cos(t + 247.9^\circ)$ V
- 10.47** $3.855 \cos(4t - 35.02^\circ)$ V
- 10.49** 1 k Ω , $5.657 \cos(200t + 75^\circ)$ A
- 10.51** $0.542 \cos(2t - 77.47^\circ)$ A
- 10.53** $-j\omega RC$, $-V_m \cos \omega t$
- 10.55** $35.76 \cos(10^4 t - 26.56^\circ)$ μ A
- 10.57** $\frac{C_1}{C_2} \left(\frac{1 + j\omega R_2 C_2}{1 + j\omega R_1 C_1} \right)$, $\frac{C_1}{C_2}$, $\frac{R_2}{R_1}$, $\frac{C_1}{C_2} \left(\frac{1 + jR_2 C_2 / R_1 C_1}{1 + j} \right)$,
 $\frac{C_1}{C_2} \left(\frac{1 + j}{1 + jR_1 C_1 / R_2 C_2} \right)$
- 10.59** $\frac{R_2 + R_3 + j\omega C_2 R_2 R_3}{(1 + j\omega R_1 C_1)(R_3 + j\omega C_2 R_2 R_3)}$
- 10.61** $35.78 \cos(1000t + 26.56^\circ)$ V
- 10.63** $1.465 \angle 79.59^\circ$ A
- 10.65** $1.664 \angle -146.4^\circ$ V
- 10.67** $15.91 \angle 169.6^\circ$, $5.172 \angle -138.6^\circ$, $2.27 \angle -152.4^\circ$ V
- 10.69** Proof
- 10.71** (a) 180 kHz, (b) 40 k Ω
- 10.73** Proof
- 10.75** Proof

Chapter 11

- 11.1** $800 + 1600 \cos(100t + 60^\circ)$, 800 W
- 11.3** 7.5 W, 5 W, 0 W, 2.5 W, 0 W
- 11.5** 12.48 W
- 11.7** 43.78 W
- 11.9** 0 W
- 11.11** (a) $0.471 + j1.882 \Omega$, 15.99 W, (b) $2.5 - j1.167 \Omega$, 1.389 W
- 11.13** $0.5 - j0.5 \Omega$, 90 W
- 11.15** $21.23 - j10.15 \Omega$
- 11.17** 6.792Ω , 6.569 W