12.69 $\mathbf{Z}_Y = 2.133\ \Omega$

12.71 $1.448\angle -176.6^\circ$ A, $1252 + j711.6$ VA, $1085 + j721.2$ VA

Chapter 13

13.1 10 H

13.3 150 mH, 50 mH, 25 mH, 0.2887

13.5 $(R_1 + j\omega L_1)\mathbf{I}_1 - j\omega M\mathbf{I}_2$, $-j\omega M\mathbf{I}_1 + (R_2 + j\omega L_2)\mathbf{I}_2$

13.7 $2.392\angle 94.57^\circ$ V

13.9 $\dfrac{jI_m(\omega L - 1/\omega c)}{R + j\omega L + 1/j\omega C}$

13.11 $\mathbf{V}_{\text{Th}} = 5.349\angle 34.11^\circ$ V, $\mathbf{Z}_{\text{Th}} = 2.332\angle 50^\circ\ \Omega$

13.13 $2.462\angle 72.18^\circ$ A, $0.878\angle -97.48^\circ$ A, $3.329\angle 74.89^\circ$ A, 43.67 mJ

13.15 $3.199\angle -175.2^\circ$ A

13.17 (a) 0.3535, (b) $0.3217\cos(4t + 57.6^\circ)$ V, (c) 1.168 J

13.19 $3.755\angle -36.34^\circ$ A, $3.755\angle 143.7^\circ$ A

13.21 0.984, 130.5 mJ

13.23 (a) $L_a = 10$ H, $L_b = 15$ H, $L_c = 5$ H, (b) $L_A = 18.33$ H, $L_B = 27.5$ H, $L_C = 55$ H

13.25 $12.77 + j7.15\ \Omega$

13.27 $1.324\angle -53.05^\circ$ kΩ

13.29 0.5 A, -1.5 A

13.31 $\dfrac{V_m}{nR}\cos\omega t$ A, $-\dfrac{V_m}{n^2R}\cos\omega t$

13.33 $2.963\angle 32.9^\circ$ V, $2.963\angle -147.1^\circ$ V

13.35 $8 - j1.5\ \Omega$, $2.95\angle 10.62^\circ$ A

13.37 (a) 5, (b) 8 W

13.39 1054 W

13.41 (a) $25.9\angle 69.96^\circ$, $12.95\angle 69.96^\circ$ A (rms), (b) $21.06\angle 147.4^\circ$, $42.12\angle 147.4^\circ$, $42.12\angle 147.4^\circ$ V(rms), (c) $1554\angle 20.04^\circ$ VA

13.43 $P_{8\Omega} = 2.778$ W, $P_{2\Omega} = 11.11$ W, $P_{4\Omega} = 5.556$ W

13.45 6 A, 0.36 A, -60 V

13.47 $3.795\angle 18.43^\circ$, $1.897\angle 18.43^\circ$, $0.6325\angle 161.6^\circ$

13.49 $1.245\angle -33.76^\circ$, $0.8893\angle -33.76^\circ$, $0.3557\angle 146.2^\circ$ A, 7.51 W

13.51 74.9 W

13.53 (a) $\dfrac{1}{3}$, (b) 1604, 2778 A, (c) 2778, 4812 A

13.55 (a) delta-delta connection, (b) 66.67, 13.05 A, (c) 16.67, 28.87 A, (d) 55 kVA

13.57 (a) 144.3 A, (b) 238.7, (c) 13.05 A

13.59 $4.253\angle -8.526^\circ$ A, $1.564\angle 27.49^\circ$ A, 4.892 W

13.61 $1.304\angle 62.92^\circ$ A

13.63 $19.55\angle 83.32^\circ$ V, $68.47\angle 46.4^\circ$ V, $0.4434\angle -92.6^\circ$ A

13.65 $4.028\angle -52.38^\circ$, $2.019\angle -52.11^\circ$, $1.338\angle -52.2^\circ$ A

13.67 7.5 kΩ

13.69 315 W

13.71 (a) 0.1, (b) 25 turns, (c) 1.667 A, 16.67 A

13.73 (a) 112 V, (b) 0.2613 A, 11.2 A, (c) 1254 W

13.75 (a) 733.4 V, (b) 440 V

Chapter 14

14.1 $\dfrac{j\omega/\omega_o}{1+j\omega/\omega_o}, \omega_o = \dfrac{1}{RC}$

14.3 (a) $\dfrac{1}{s^2R^2C^2+3sRC+1}$, (b) $-4.787, -32.712$

14.5 (a) $\dfrac{1}{1+j\omega RC-\omega^2LC}$, (b) $\dfrac{j\omega L-\omega^2RLC}{R+j\omega L-\omega^2RLC}$

14.7 (a) 1.005773, (b) 0.4898, (c) 1.718×10^5

14.9 See Fig. E.20.

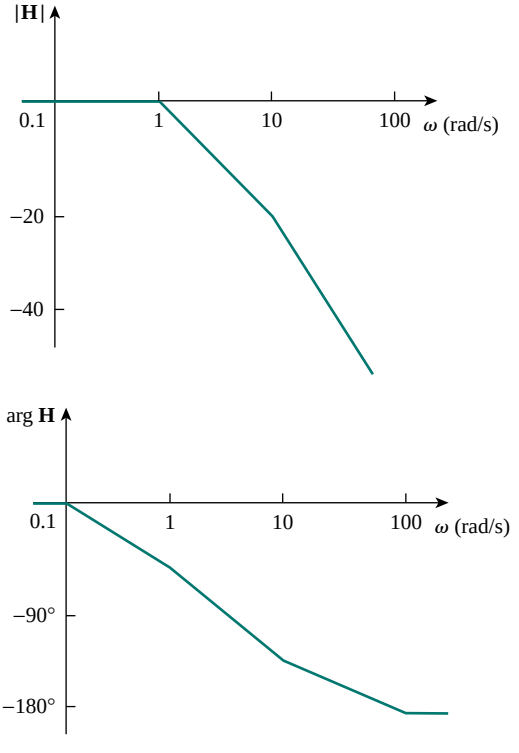

Figure E.20 For Prob. 14.9.