Chapter 9, Problem 62.

For the circuit in Fig. 9.69, find the input impedance $\mathbf{Z}_{in}$ at 10 krad/s.

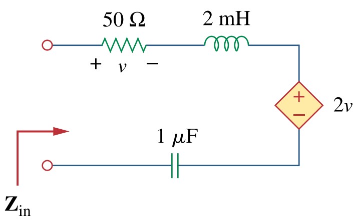
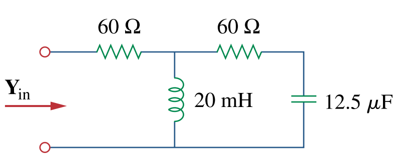


Figure 9.69
For Prob. 9.62.

Chapter 9, Problem 67.

At $\omega = 10^3$ rad/s find the input admittance of the circuits in Fig. 9.74a.



(a)

Chapter 9, Problem 68.

Determine $\mathbf{Y}_{eq}$ for the circuit in Fig. 9.75.

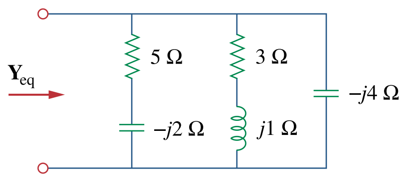


Figure 9.75
For Prob. 9.68.

Chapter 9, Problem 77.

Refer to the *RC* circuit in Fig. 9.81.

(a) Calculate the phase shift at 2 MHz.

(b) Find the frequency where the phase shift is 45^o .

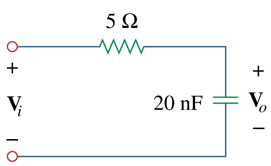


Figure 9.81
For Prob. 9.77.

Chapter 9, Problem 90.

An industrial coil is modeled as a series combination of an inductance L and resistance R, as shown in Fig. 9.90. Since an ac voltmeter measures only the magnitude of a sinusoid, the following measurements are taken at 60 Hz when the circuit operates in the steady state:

$|\mathbf{V}_s| = 145$ V, $|\mathbf{V}_1| = 50$ V, $|\mathbf{V}_o| = 110$ V

Use these measurements to determine the values of L and R.

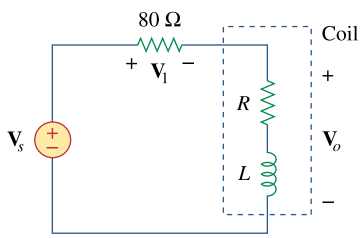


Figure 9.90
For Prob. 9.90.

Chapter 9, Problem 91.

Figure 9.91 shows a parallel combination of an inductance and a resistance. If it is desired to connect a capacitor in series with the parallel combination such that the net impedance is resistive at 10 MHz, what is the required value of C?

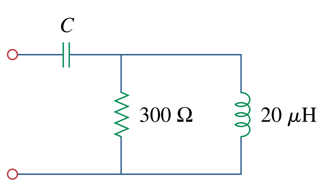


Figure 9.91
For Prob. 9.91.

Chapter 9, Problem 92.

A transmission line has a series impedance of $\mathbf{Z} = 100\angle 75^o\ \Omega$ and a shunt admittance of $\mathbf{Y} = 450\angle 48^o\ \mu\text{S}$. Find: (a) the characteristic impedance $\mathbf{Z}_o = \sqrt{\mathbf{Z}/\mathbf{Y}}$
(b) the propagation constant $\gamma = \sqrt{\mathbf{ZY}}$.

Chapter 9, Problem 93.

A power transmission system is modeled as shown in Fig. 9.92. Given the following;

Source voltage	$\mathbf{V}_s = 115\angle 0^o$ V,
Source impedance	$\mathbf{Z}_s = 1 + j0.5\,\Omega$,
Line impedance	$\mathbf{Z}_\ell = 0.4 + j0.3\,\Omega$,
Load impedance	$\mathbf{Z}_L = 23.2 + j18.9\,\Omega$,
find the load current	$\mathbf{I}_L$.

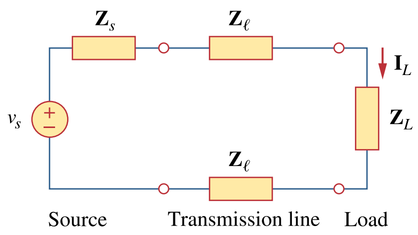


Figure 9.92
For Prob. 9.93.

Chapter 14, Problem 46.

For the network illustrated in Fig. 14.85, find

(a) the transfer function $\mathbf{H}(\omega) = \mathbf{V}_o(\omega)/\mathbf{I}(\omega)$,

(b) the magnitude of **H** at $\omega_o = 1$ rad/s.

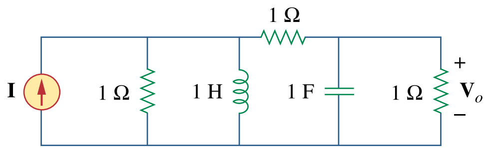


Figure 14.85
For Probs. 14.46, 14.78, and 14.92.

Chapter 14, Problem 97.

The crossover circuit in Fig. 14.109 is a highpass filter that is connected to a tweeter. Determine the transfer function $\mathbf{H}(\omega) = \mathbf{V}_o(\omega)/\mathbf{V}_i(\omega)$.

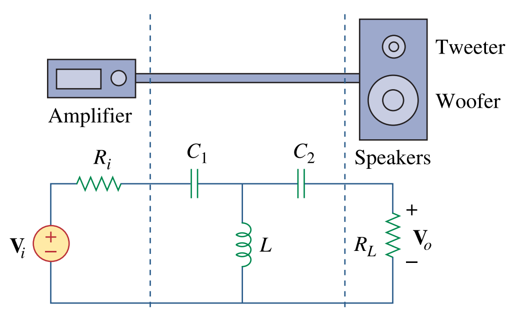


Figure 14.109
For Prob. 14.97.

Chapter 14, Problem 98.

A certain electronic test circuit produced a resonant curve with half-power points at 432 Hz and 454 Hz. If Q = 20, what is the resonant frequency of the circuit?

Chapter 14, Problem 100.

In a certain application, a simple RC lowpass filter is designed to reduce high frequency noise. If the desired corner frequency is 20 kHz and $C = 0.5\,\mu$F find the value of R.

Chapter 14, Problem 102.

Practical *RC* filter design should allow for source and load resistances as shown in Fig. 14.110. Let $R = 4\text{k}\Omega$ and C = 40-nF. Obtain the cutoff frequency when:

(a) $R_s = 0$, $R_L = \infty$,

(b) $R_s = 1k\Omega$, $R_L = 5k\Omega$.

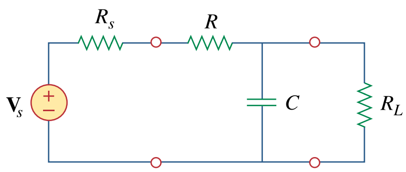


Figure 14.110
For Prob. 14.102.

Chapter 14, Problem 103.

The *RC* circuit in Fig. 14.111 is used for a lead compensator in a system design. Obtain the transfer function of the circuit.

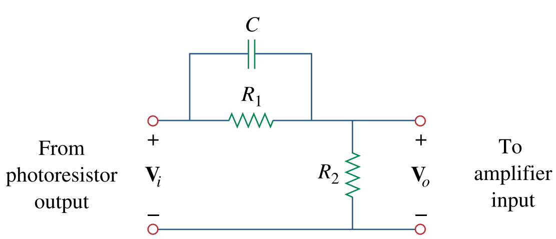


Figure 14.111
For Prob. 14.103.