14.22 Find the transfer function $\mathbf{H}(\omega)$ with the Bode magnitude plot shown in Fig. 14.74.

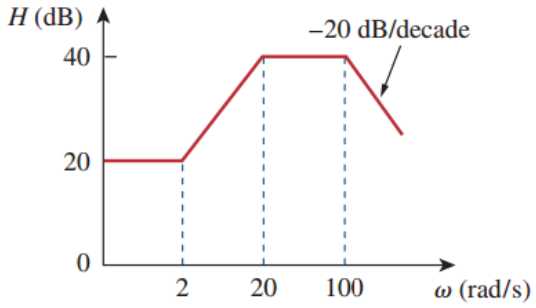

Figure 14.74
For Prob. 14.22.

14.25 A series *RLC* network has $R = 2\ \text{k}\Omega$, $L = 40\ \text{mH}$, and $C = 1\ \mu\text{F}$. Calculate the impedance at resonance and at one-fourth, one-half, twice, and four times the resonant frequency.

14.29 Let $v_s = 20\cos(at)$ V in the circuit of Fig. 14.77. Find ω_0, Q, and B, as seen by the capacitor.

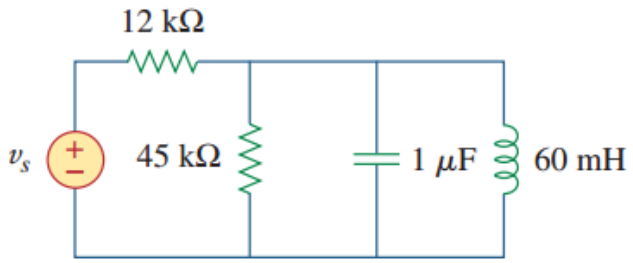

Figure 14.77
For Prob. 14.29.

*14.44 For the circuit in Fig. 14.83, find:

(a) the resonant frequency ω_0

(b) $\mathbf{Z}_{in}(\omega_0)$

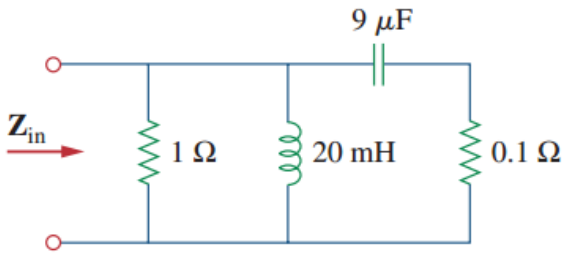

Figure 14.83
For Prob. 14.44.

14.50 Determine what type of filter is in Fig. 14.87. Calculate the corner frequency f_c.

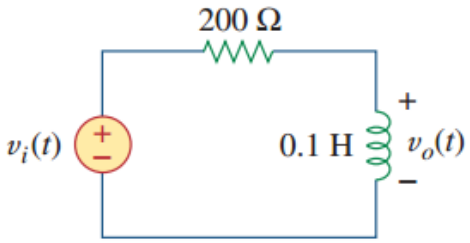

Figure 14.87
For Prob. 14.50.

14.64 Obtain the transfer function of the active filter in Fig. 14.91 on the next page. What kind of filter is it?

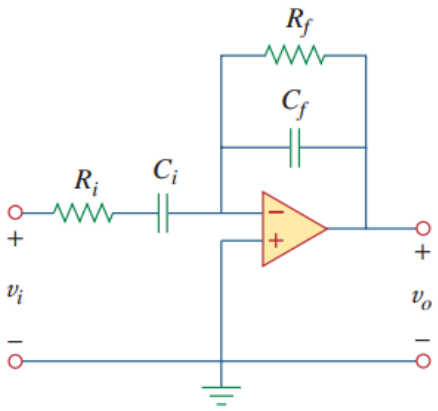

Figure 14.91
For Prob. 14.64.

***14.70** A second-order active filter known as a Butterworth filter is shown in Fig. 14.95.

(a) Find the transfer function $\mathbf{V}_o/\mathbf{V}_i$.

(b) Show that it is a lowpass filter.

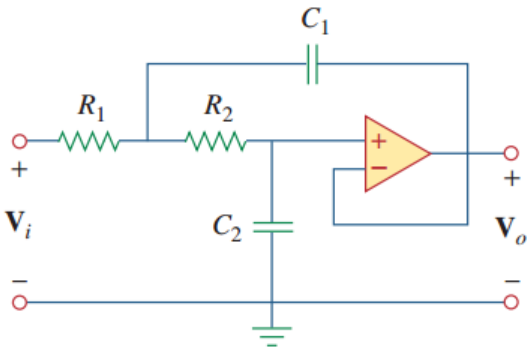

Figure 14.95
For Prob. 14.70.

14.84 Using *PSpice or MultiSim*, obtain the frequency response of the circuit in Fig. 14.101 on the next page.

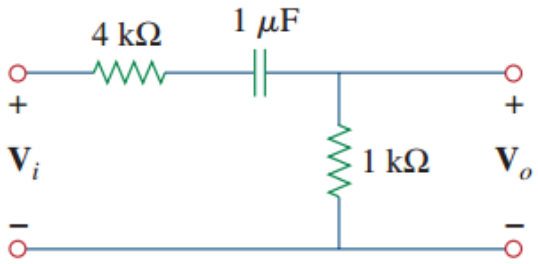

Figure 14.101
For Prob. 14.84.