Chapter 9, Solution 59.

For the network in Fig. 9.66, find $\mathbf{Z_{in}}$. Let $\omega = 10$ rad/s.

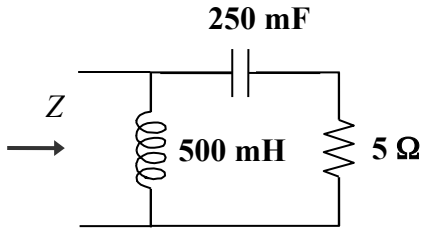

Figure 9.66
For Prob. 9.59.

Solution

$$0.25F \longrightarrow \frac{1}{j\omega C} = \frac{1}{j10x0.25} = -j0.4$$

$$0.5H \longrightarrow j\omega L = j10x0.5 = j5$$

$$Z_{in} = j5 \| (5 - j0.4) = \frac{(5\angle 90°)(5.016\angle -4.57°)}{6.794\angle 42.61°} = 3.691\angle 42.82°$$

$$= \mathbf{(2.707+j2.509)\ \Omega}.$$