Homework Problem #045

In response to an input signal voltage

$$v_S(t) = 24\cos 2000\pi t \ \text{V},$$

the input current in the circuit shown was measured as

$$i(t) = 6\cos(2000\pi t - 60°) \ \text{mA}.$$

Determine the equivalent input impedance $\mathbf{Z}$ of the circuit.