Chapter 9, Solution 42.

$$\omega = 200$$

$$50\ \mu F \longrightarrow \frac{1}{j\omega C} = \frac{1}{j(200)(50\times10^{-6})} = -j100$$

$$0.1\ H \longrightarrow j\omega L = j(200)(0.1) = j20$$

$$50 \,||\, -j100 = \frac{(50)(-j100)}{50 - j100} = \frac{-j100}{1 - j2} = 40 - j20$$

$$\mathbf{V}_o = \frac{j20}{j20 + 30 + 40 - j20}(60\angle 0°) = \frac{j20}{70}(60\angle 0°) = 17.14\angle 90°$$

Thus,

$$v_o(t) = \mathbf{17.14\ \sin(200t + 90°)\ V}$$

or

$$v_o(t) = \mathbf{17.14\ \cos(200t)\ V}$$