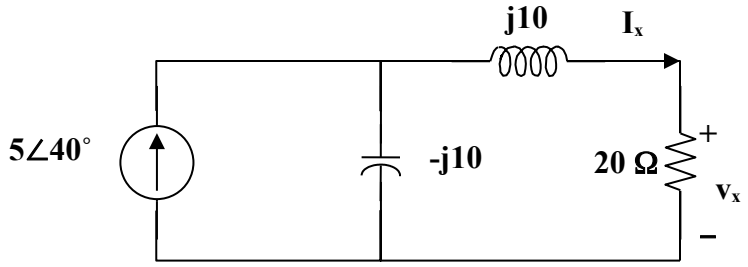
Chapter 9, Solution 50.

Since ω = 100, the inductor = j100x0.1 = j10 Ω and the capacitor = $1/(j100x10^{-3})$ = -j10Ω.



Using the current dividing rule:

$$I_x = \frac{-j10}{-j10+20+j10}5\angle 40° = -j2.5\angle 40° = 2.5\angle -50°$$

$$V_x = 20I_x = 50\angle -50°$$

$$v_x(t) = \mathbf{50\cos(100t - 50°)\ V}$$