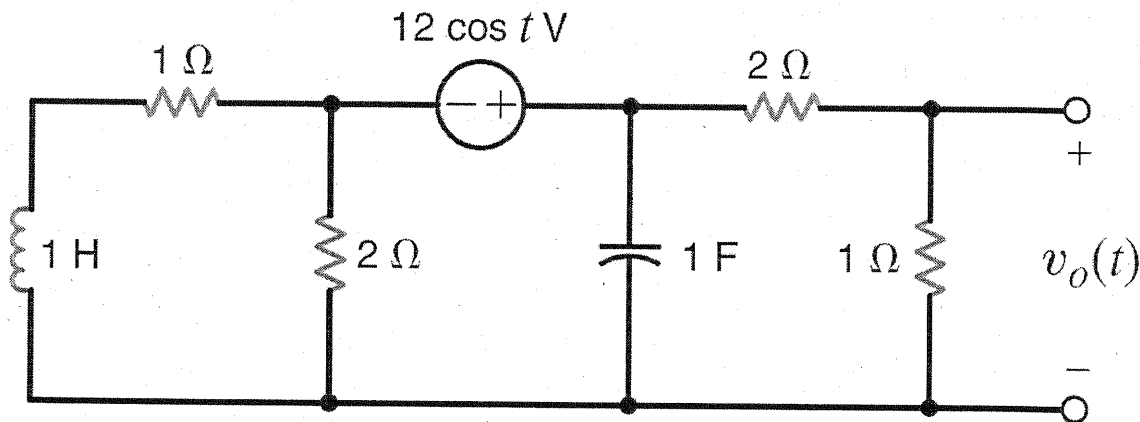
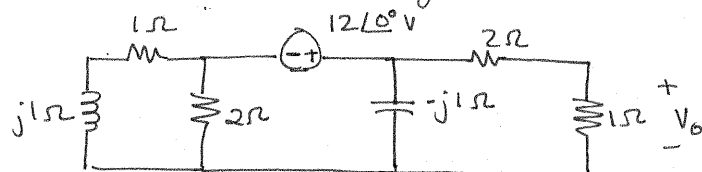


**14.58** Find the steady-state response  $v_o(t)$  for the network in Fig. P14.58.



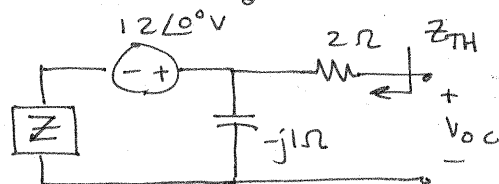
**Figure P14.58**

**SOLUTION:** In steady state  $s \rightarrow j\omega$  and  $\cos \omega t \Rightarrow$  phasor.



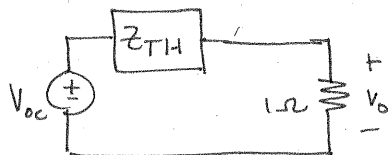
$$Z = 2(1+j1)/(3+j1)$$

Thévenin eq



$$Z_{TH} = 2 + \frac{Z(-j1)}{Z-j1} = \frac{8-j4}{-j1+3}$$

$$V_{oc} = 12 \angle 0^\circ \left( \frac{-j1}{-j1+Z} \right) = \frac{12(1-j3)}{3-j1}$$



$$V_o = \frac{V_{oc}}{1+Z_{TH}} = \frac{12(1-j3)}{17-j7} = \frac{12(1-j3)}{11-j5}$$

$$V_o = 3.13 \angle -47.2^\circ \text{ V}$$

$$v_o(t) = 3.13 \cos(t - 47.2^\circ) \text{ V}$$