HW 7

Posted Monday March 19h

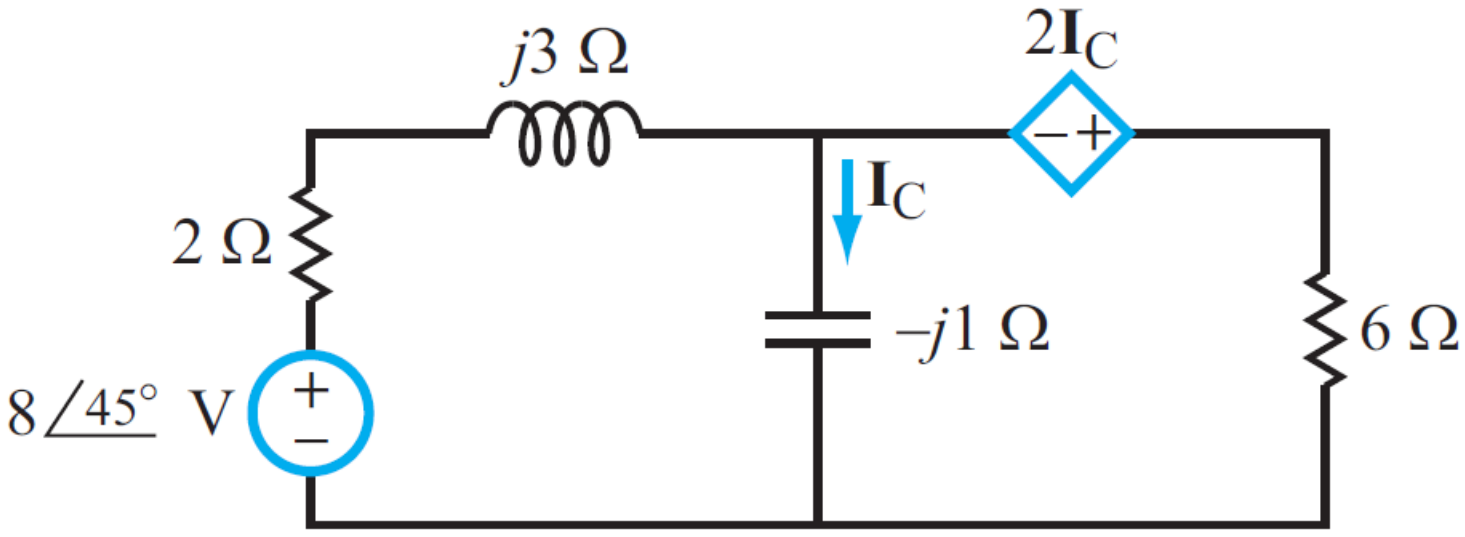
Due Monday March 26h

EE40

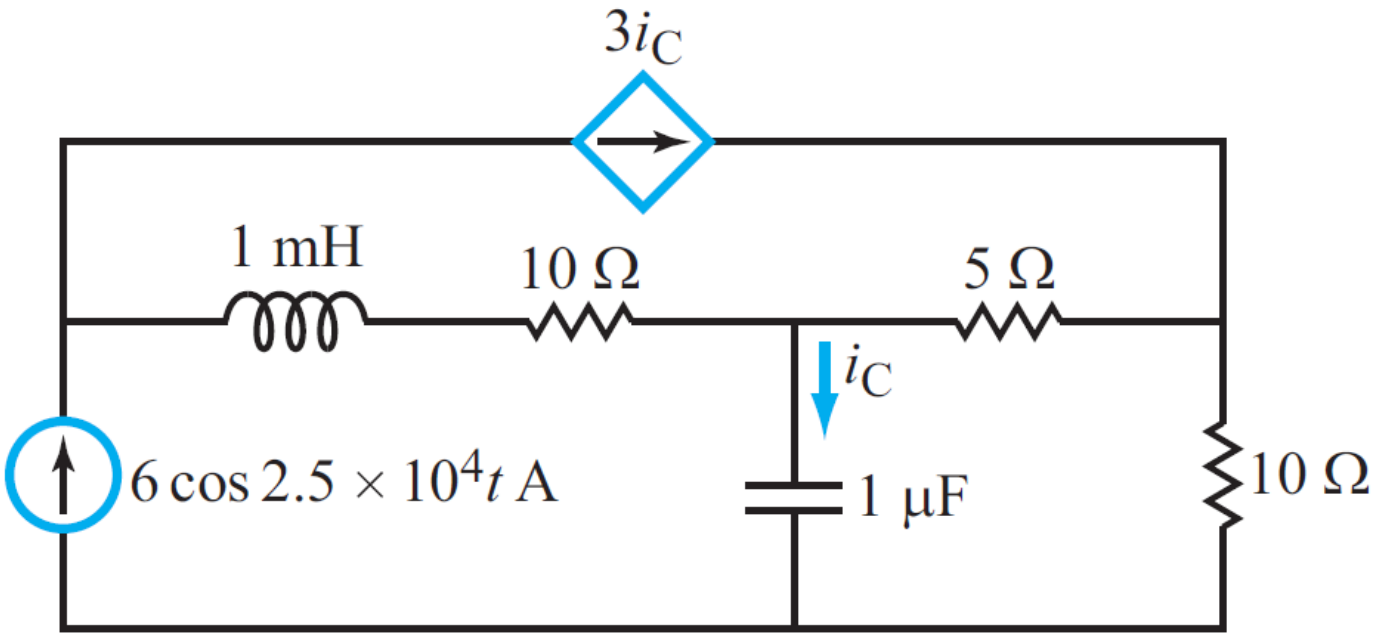
Maharbiz

Spring 2012

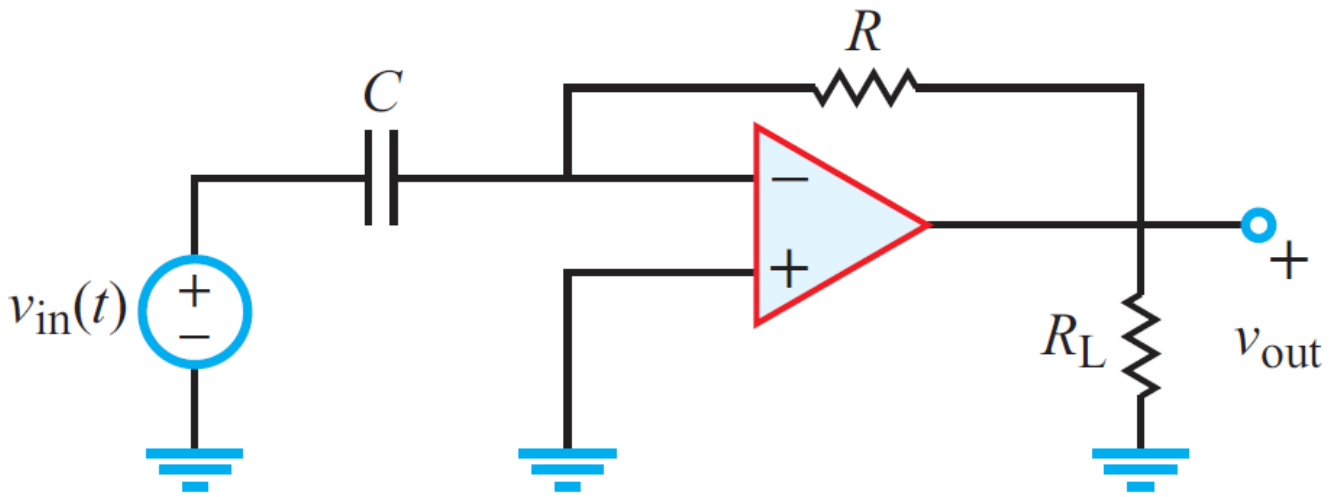
1. Apply nodal analysis to determine I_C in the circuit below.



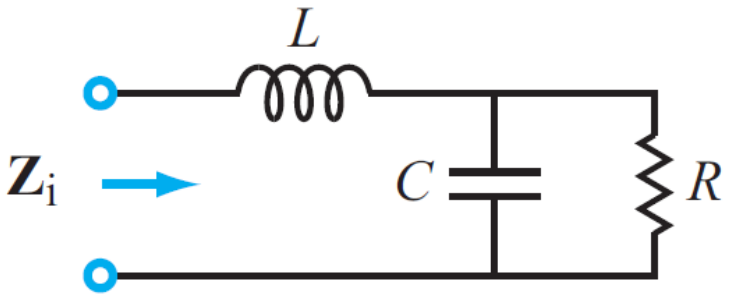
2. Use any analysis technique of your choice to determine $i_C(t)$ in the circuit below.



3. The input signal in the op-amp circuit below is given by $v_{in}(t) = V_0 \cos \omega t$. Assuming the op amp is operating within its linear range, obtain an expression for $v_{out}(t)$ by applying the phasor-domain technique, and then evaluate it for the frequency at which $\omega RC = 1$.



4. Determine the resonant frequency of the circuit below, given that R = 100 Ω, L = 5 mH, and C = 1 μF.



5. For the two circuits shown below, determine
(a) the transfer function **H** = $\mathbf{V_o/V_i}$
(b) the frequency ω_o at which **H** is purely real.