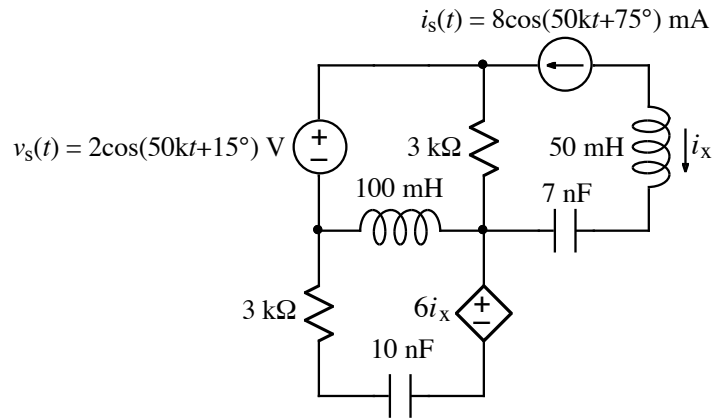
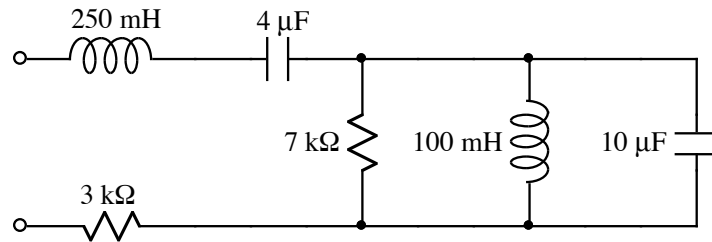




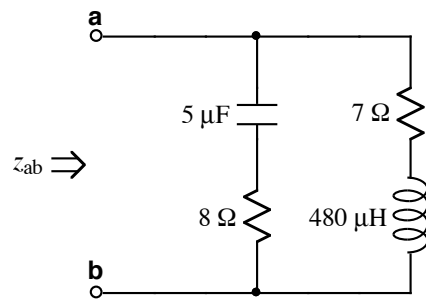
1. Draw the frequency-domain circuit diagram (with numerical values for impedances and phasors [except the dependent source which will be labeled $6\mathbf{I}_x$]) for the following circuit:



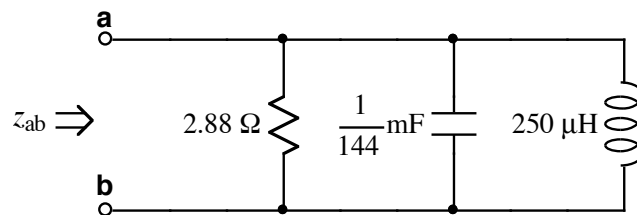
2. a) Find the total impedance of the circuitry shown below if $\omega = 1000$ rad/s.



- b) Given $\omega = 50$ k rad/s, find z_{ab} .

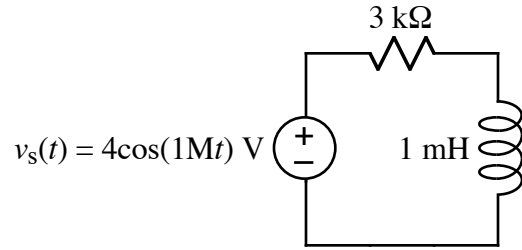


- 3.

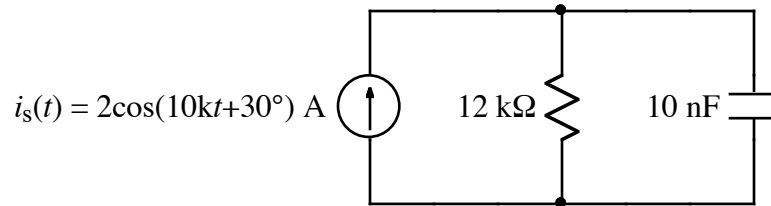


Find a frequency, ω , that causes z_{ab} to have a phase angle of -45° , (i.e., imaginary part is the negative of the real part). Hint: use admittance, (the reciprocal of impedance).

4.

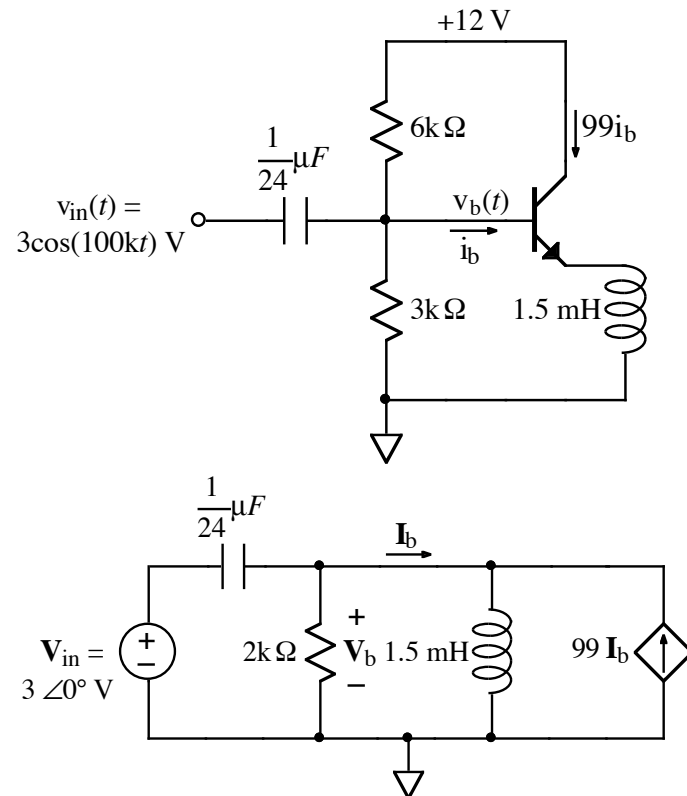


- a) Find time-domain expressions for the waveforms of the voltages across the R and L in the above circuit.



- b) Find time-domain expressions for the waveforms of the currents through the R and C in the above circuit.

5.



The above circuit diagrams show an emitter-follower amplifier and its high-frequency equivalent circuit. Find $v_b(t)$.