ELEC 226   **Circuit Theory II**
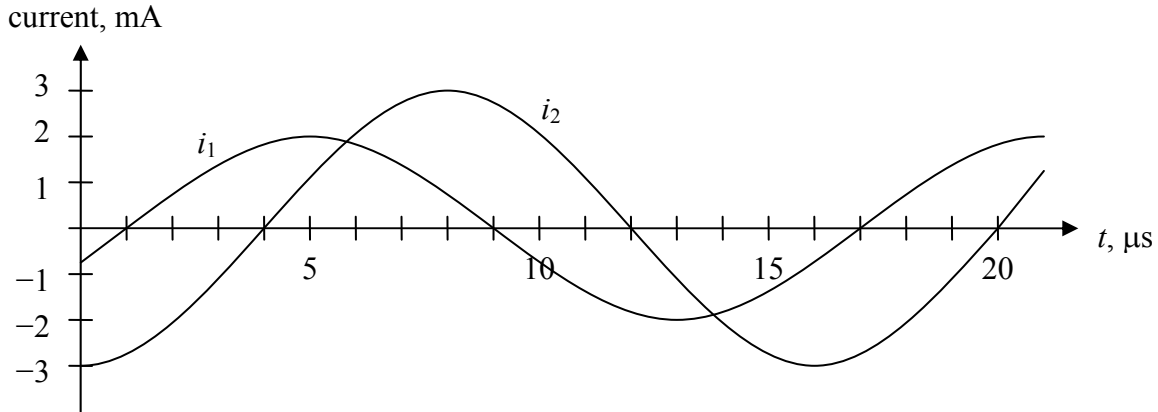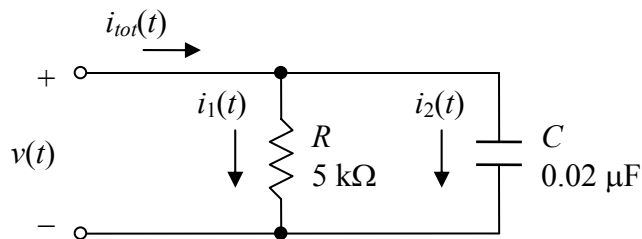
Review Problems on Sinusoids

1. Calculate the phase shift between waveforms i_1 and i_2 in the figure below. Be sure to indicate which waveform leads or lags the other.

current, mA

2. Suppose that a sinusoidal voltage that can be expressed as $v(t) = 20 \cos (2000\pi t)$ V is applied across the resistor and capacitor shown below.

     a. Find the currents $i_1(t)$ and $i_2(t)$ flowing through each device.
     b. Find the total current $i_{tot}(t)$ flowing into the upper node. (Express the current in standard cosine form with a positive magnitude.)
     c. What is the phase difference between $v(t)$ and $i_{tot}(t)$?

3. Show that the resonant frequency f_o of the following parallel RLC circuit is given by

$$f_o = \frac{1}{2\pi\sqrt{LC}} \text{ Hz}$$