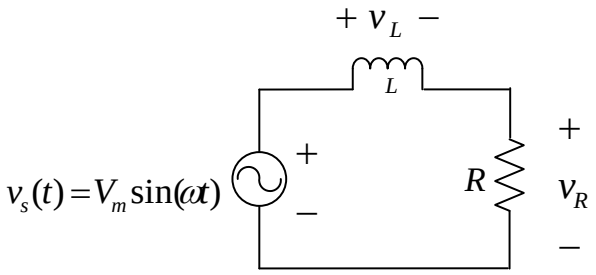
EE1002 AY2010/11 Sem1
Tutorial 6

1. The current though a 0.5 H inductor is given by $i_L(t) = 2\cos(377t + \pi/6)$.
   a. What is the impedance of the inductor?
   b. Write the expression for the voltage across the inductor.
   c. Write the phasors for the inductor voltage and current?
   d. Draw the phasor diagram for the inductor voltage and current.

2. The voltage across a 100uF capacitor takes the following values
   $v_c(t) = 40\sin(20t - \pi/2)$ V.
   a. What is the impedance of the capacitor?
   b. Write the expression for the current through the capacitor in each case.
   a. Write the phasors for the capacitor voltage and current.
   b. Draw the phasor diagram for the capacitor voltage and current.

3. In the figure given,
   a) Find the expression for v_R.
   b) Sketch the phase difference between v_R and v_S. Which of the two is leading?



4. Determine the current i(t) in the circuit shown in the figure.
   $v_s(t) = 636\cos\left(3000t + \pi/12\right)$
   $R_1 = 2.3k\Omega, R_2 = 1.1k\Omega$
   $L = 190mH, C = 55nF$