# EECS 70A: Network Analysis

Homework #4

- The homework is due Thursday 5/29/2014 at 5:30pm.
- You can choose either way to turn in your homework.
  - 1) Turn it in during discussions (Highly recommended)
  - 2) Turn it in during TA or Grader's office hour
  - 3) Slide it under TA's lab office door (Any time before deadline @EH5109)
- Note: lab location is different from office hour location.

Problem 1:

A) Given v(t) = 8 cos(ωt + π/4) find the phasor **V** that represents v(t).
   Express **V** as x+jy and as re$^{i\phi}$.
B) Given i(t) = 4 sin(ωt + π/4) find the phasor **I** that represents i(t).
   Express **I** as x+jy and as re$^{i\phi}$.
C) Given **V** = 8 + j6 find v(t).
D) Given **I** = 2 + 2j, find i(t).

Problem 2:


$I_s(t)=3 \cos(4t+45°)$ A

i

2Ω

125 mF

+

V

-
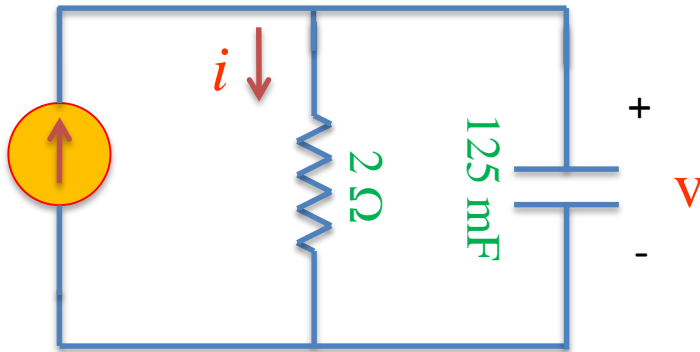
Find i(t) and v(t). Hint: convert the current source into a phasor, then find the current and voltage phasors for the whole circuit, then convert back to the time dependent i(t), v(t).

Problem 3:
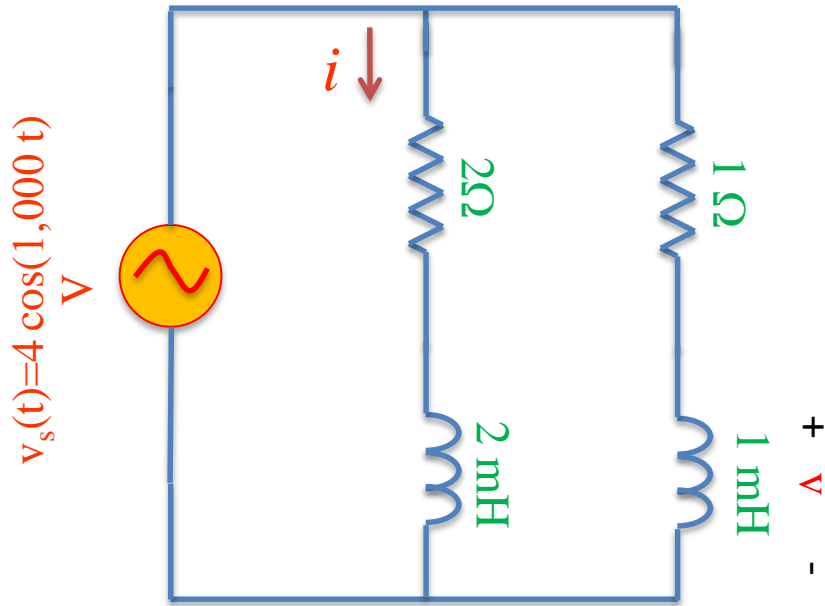
Find i(t) and v(t). Hint: convert the voltage source into a phasor, then find the current and voltage phasors for the whole circuit, then convert back to the time dependent i(t), v(t).

Problem 4: Find v(t).

$i_s(t)=10 \cos\omega t$
$\omega = 10^5$ rad/s

5 Ω

5 Ω

2 μF

2 μF

50 μH

+

v(t)

−
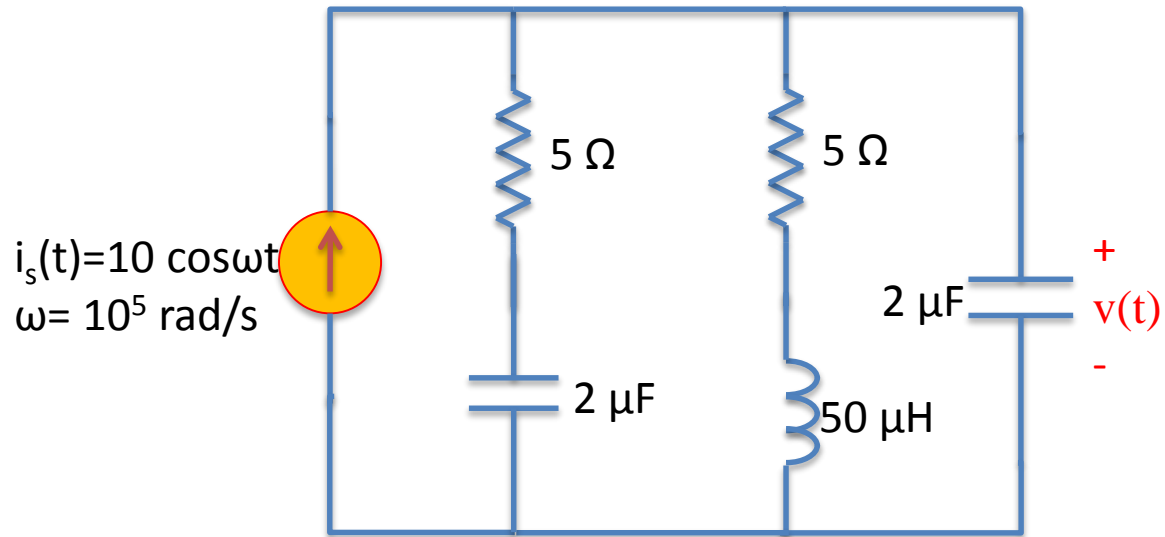
Problem 5: Suppose the following circuit has been run for enough long time.(Initial conditions are ignored.)

Find i(t), $V_1(t)$, $V_2(t)$ for this circuit. In class, we used phasors.
For the HW, I want you to do it WITHOUT phasors!