ECE 35, Winter 2019

Quiz 4

/ 12

Last name

First + middle name(s)

PID

Instructions:

- Read each problem completely and thoroughly before beginning
- All calculations need to be done on these sheets
- Write your answers in the answer boxes for each question. Make sure you list units!
- Answers without supporting calculations will receive zero credit

(1) The system is in steady state. The phasor diagram shows the voltages $\mathbf{V_a}$ and $\mathbf{V_b}$ (but you are not told which one is which). The current source is a sine wave with $\omega = 1$ rad/s.

(a) Find $v_i\left(\frac{3\pi}{4}\text{s}\right)$, i.e., v_i at time $t = \frac{3\pi}{4}$ seconds. *(2 points)*

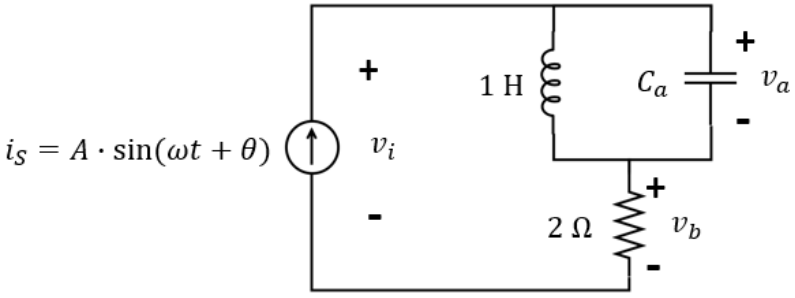
$v_i\left(\frac{3\pi}{4}\text{ s}\right)$

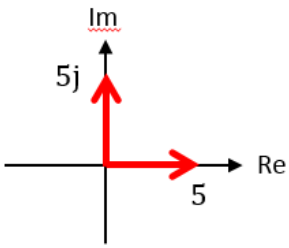
(b) What is the value of *A*? *(2 points)*

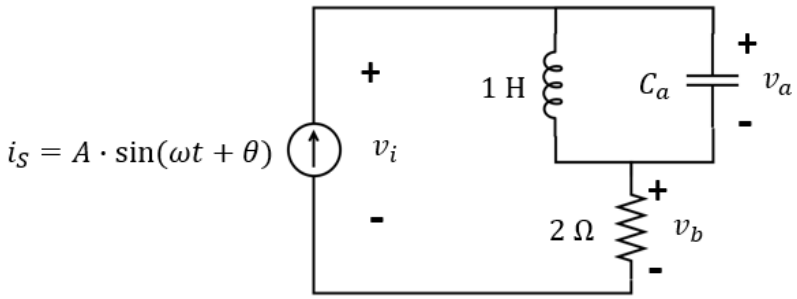
A

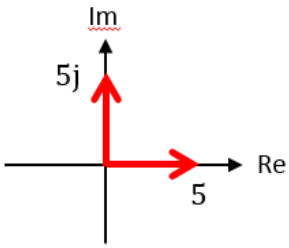
(c) What is the value of capacitor C_a? *(3 points)*

C_a






$i_S = A \cdot \sin(\omega t + \theta)$
+
v_i
-
1 H
C_a
+
v_a
-
+
2 Ω
v_b
-


Im
5j
Re
5

(2) The system is in steady state. Find $v_a\left(\frac{\pi}{10}\text{s}\right)$, i.e., v_a at time $t = \frac{\pi}{10}$ seconds. *(5 points)*

$v_a\left(\frac{\pi}{10}\text{ s}\right)$ ____