

## ECE 2350 CIRCUIT ANALYSIS I

**Homework 10 Revised**  
**7 April 2020**

**Professor Dunham**  
**Due: 14 April 2020**

Review Lecture Notes.

1. Find the phasor representation of the following functions:

(a)  $v(t) = 57 \cos(4t + 17^\circ)$ .

(b)  $i(t) = 7 \sin(3t - 27^\circ)$ .

(c)  $v(t) = 20 \sin(10t) - 15 \cos(10t + 36^\circ)$ .

2. Find the magnitude, phase and phasor representations of the following complex numbers:

(a)  $4 + 8j$ .

(b)  $\frac{4 + j}{2 + 3j}$ .

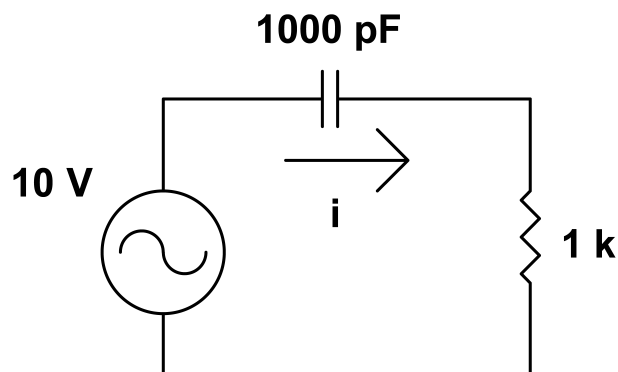
(c)  $\frac{(1 + 2j)(2 - j)}{2j(3 + 2j)}$ .

3. In the circuit shown below, find the steady-state value of the current given:

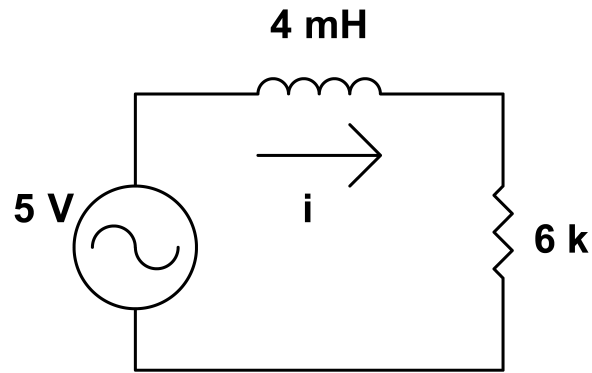
(a)  $\omega = 10^5$  rad/s.

(b)  $\omega = 10^6$  rad/s.

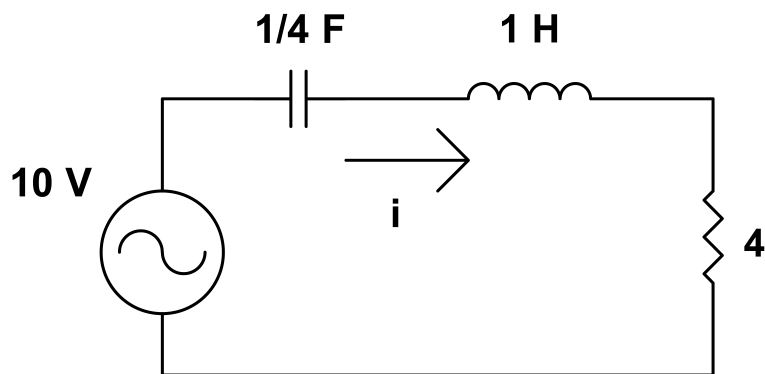
(c)  $\omega = 10^7$  rad/s.



4. In the circuit shown below, find the steady-state value of the current given  $\omega = 2 \times 10^6 \text{ rad/s}$ .



5. In the circuit shown below, find the steady-state value of the current given  $\omega = 4 \text{ rad/s}$ .



6. A resistor  $R$ , inductor  $L$  and capacitor  $C$  are connected in parallel to an alternating voltage source of 160 V at a frequency of 250 Hz. A current of 2 A flows through the resistor and a current of 0.8 A flows through the inductor. The total current is 2.5 A. Find the values of  $R$ ,  $L$  and  $C$ .

