

# ECE222

## Quiz 4

To get full credit, show all your work. If you need extra space write on the back and clearly indicate the question number.

- 1) Given the following voltage and current:

$$i(t) = 5 \sin(377t - 20^\circ) \text{ A}$$

$$v(t) = 10 \cos(377t + 30^\circ) \text{ V}$$

Determine the phase relationship between  $i(t)$  and  $v(t)$ , i.e. which leads which and by how much?

- 2) Give the phasor representation of  $v_0 = -4 \sin(10t + 10^\circ)$

- 3) Find the sinusoid represented by the phasor:  $\mathbf{I} = -3 + j4$

- 4) Using phasors derive the phase relationship between voltage and current for a capacitor, i.e. which leads which and by how much.