ECE 210 - F00 HW: Appendix C & Chapter 9

1. Convert to polar form:

a) $3+2j$
b) $2+3j$
c) $-1+7j$
d) $7-j$
e) $-1-7j$
f) $1+7j$
g) $7+j$
h) $-7+j$

2. Convert to rectangular form:

a) $7\angle 20°$
b) $-7\angle 20°$
c) $7\angle 200°$
d) $-7\angle 200°$
e) $3\angle 20°$
f) $3\angle -20°$
g) $10\angle 0°$
h) $1\angle -90°$

3. Perform the following calculations. Report the answer in rectangular form.

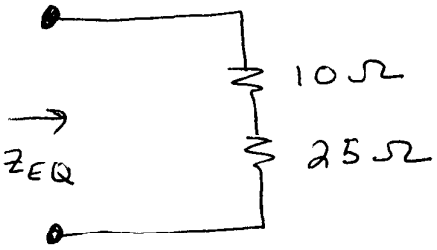
a) $(3+2j)-(7+j)$
b) $(-7+j)+10\angle 0°$
c) $10\angle 90° - 10\angle 0°$
d) $(3+2j) * 10\angle 20°$

4. Perform the following calculations. Report the answer in polar form.

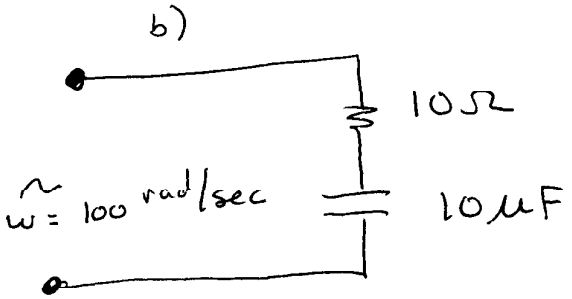
a) $(7\angle 30°) * (2+3j)$
b) $(3+2j)-(7+j)$
c) $\dfrac{(2+j)}{10\angle 20°}$
d) $\dfrac{(2+j)}{(3-j)}$

5. Find the equivalent impedance of the following configurations.

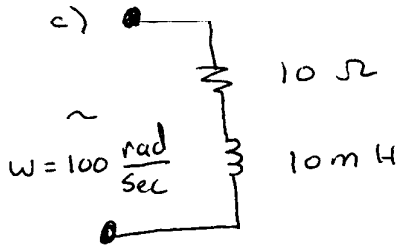
a)



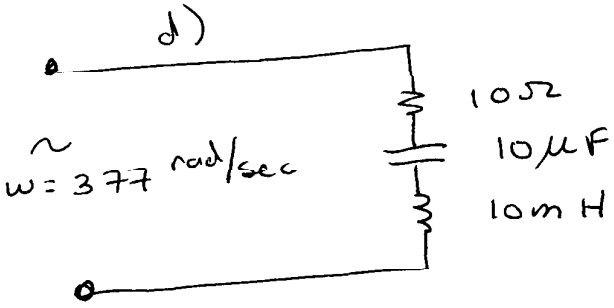
b)



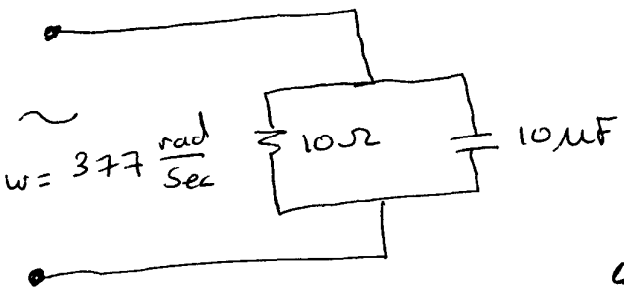
c)



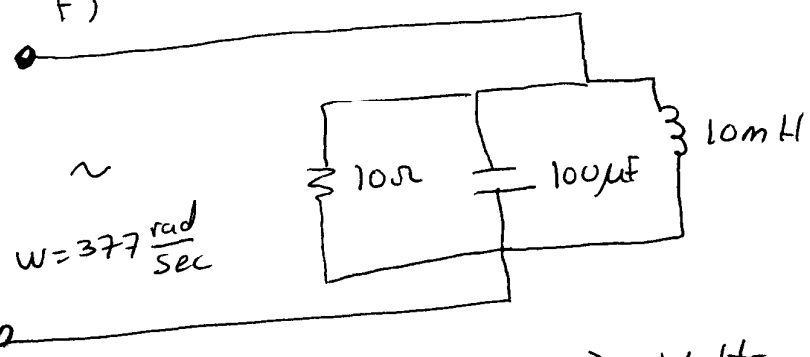
d)



e)



F)



6. Find $i(t)$ given $v(t) = 10\cos(377t + 20°)$ Volts.

Hint: write all elements using complex impedances; $Z_R = R$, $Z_L = j\omega L$, $Z_C = -j/\omega C$, and use circuit simplification.