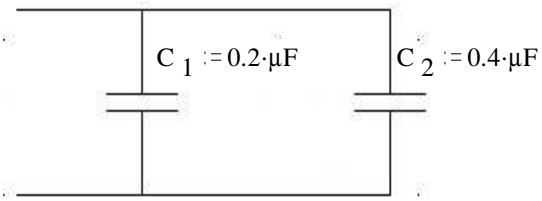
Name: _____ ECE 2210 / 00 homework # 8 a

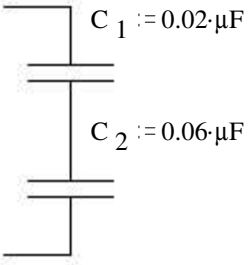
You will probably need more paper for your calculations, but problems 3 & 4 require waveform drawings and you may want to hand this sheet in with your drawings.

1) Find $C_{eq}$ in each case

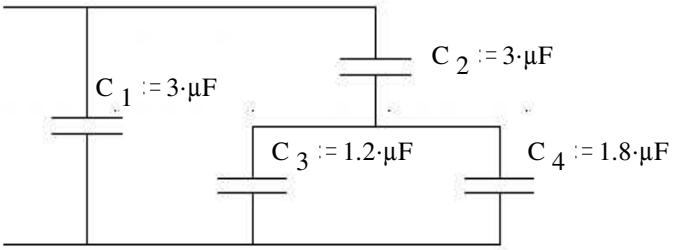
a)




b)

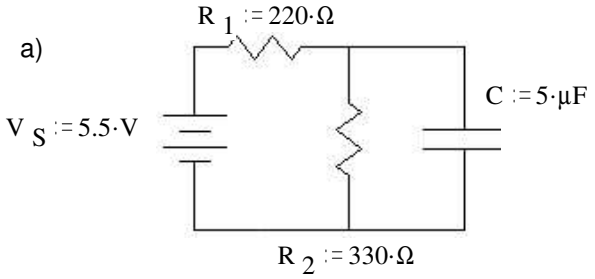



c)

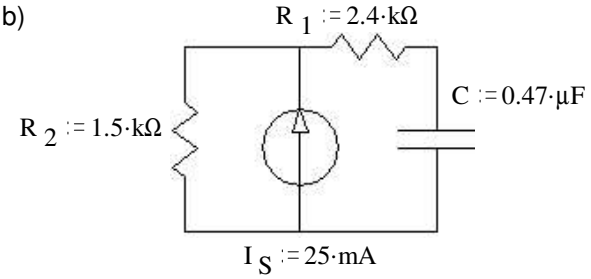



2. Each of the following circuits have been connected as shown for a long time. Find the voltage across each capacitor and the energy stored in each.

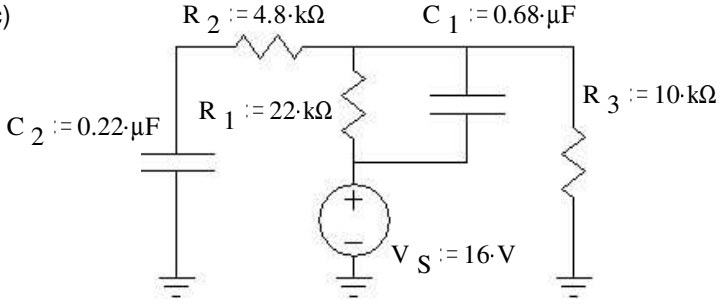
a)



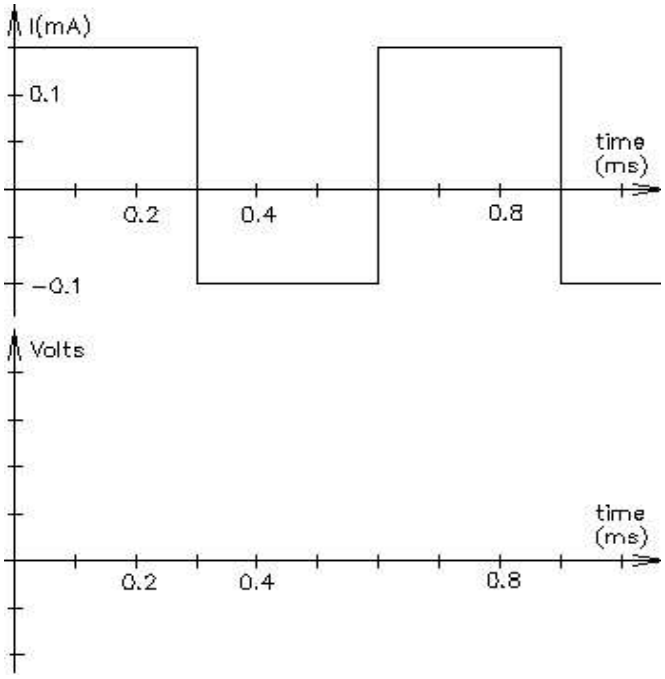

b)



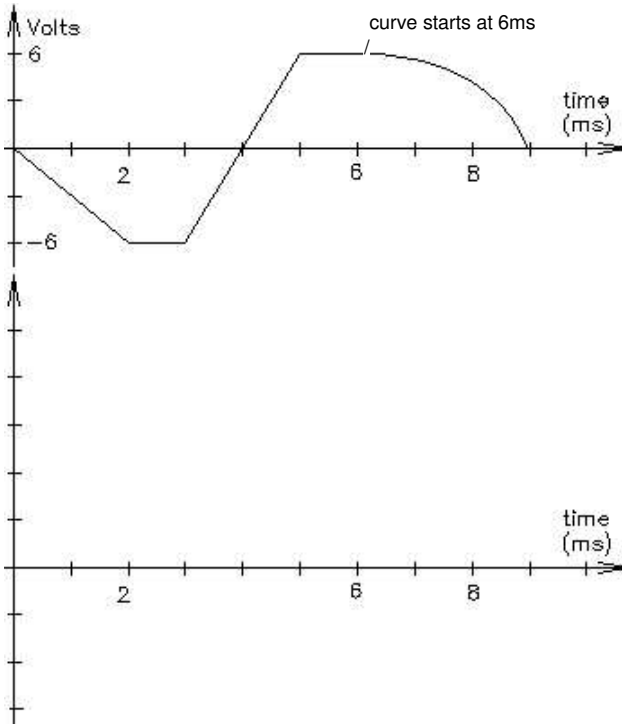

c)



3. The current waveform shown below flows through a $0.025\ \mu F$ capacitor. Make an accurate drawing of the voltage across it. Label your graph. Assume the initial voltage across the capacitor is $0\ V$.



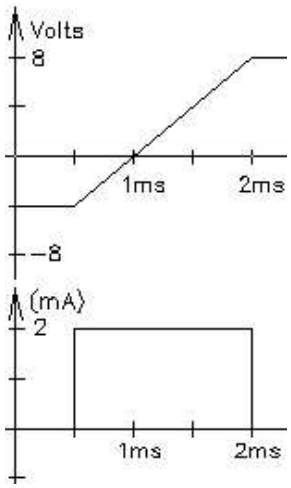

4. The voltage across a $2\ \mu F$ capacitor is shown below. Make an accurate drawing of the capacitor current. Label your graph.




5. The voltage across a $0.68\ \mu F$ capacitor is $v_c = 6 \cdot V \cdot \cos\left(200 \cdot t + \frac{\pi}{2}\right)$ find $i_c$.

6. The current through a $0.0047\ \mu F$ capacitor is $i_c = 18 \cdot \mu A \cdot \cos\left(628 \cdot t - \frac{\pi}{4}\right)$ find $v_c$.

7. A capacitor voltage and current are shown at right. What value is the capacitor?




**Answers**

1. a) $0.6 \cdot \mu F$ b) $0.015 \cdot \mu F$ c) $4.5 \cdot \mu F$

2. a) $3.3 V$ $0.027 \cdot mJ$ b) $37.5 \cdot V$ $0.33 \cdot mJ$ c) $11 \cdot V$ $0.0411 \cdot mJ$ $5 \cdot V$ $2.75 \cdot \mu J$

3. $1.8 \cdot V$ $0.6 \cdot V$ $2.4 \cdot V$ 4. $-6 \cdot mA$ $12 \cdot mA$ ramp to $-8 mA$

5. $i_c = -0.816 \cdot mA \cdot \cos(200 \cdot t)$ 6. $v_c = -6.1 \cdot V \cdot \cos\left(628 \cdot t + \frac{\pi}{4}\right)$ 7. $0.25 \cdot \mu F$