EE 210
Capacitor/Inductor Notes

Capacitors
1. Since $i = Cdv/dt$ when v is not changing (dc) $i = 0$;
2. A capacitor is an open circuit to dc
3. Since $i = Cdv/dt$, if v is discontinuous $i = \infty$.
4. In general, you cannot change the capacitor voltage instantaneously.
5. The ideal capacitor does not dissipate energy. It accepts charge, stores it, and returns it to the circuit.
6. A real capacitor can be modeled as an ideal capacitor in parallel with a large resistor. The resistance may be 100 MΩ or so.
7. Capacitors in parallel add (like resistors in series).
8. Capacitors in series add as their reciprocals (like resistors in parallel).

Inductors
1. Since $v = Ldv/dt$, if i is not changing (dc) $v = 0$.
2. An inductors looks like a short to dc.
3. If inductor current changes instantaneously $di/dt = \infty = v$.
4. In general, you cannot change inductor current instantaneously.
5. An ideal inductor does not dissipate energy but stores it in a magnetic field.
6. A practical inductor can be modeled as an ideal inductor in series with a small resistor and the resistor/inductors combination is in parallel with a small capacitor.
7. Inductors in parallel add as their reciprocals (like resistors in parallel).
8. Inductors in series add (like resistors in series).