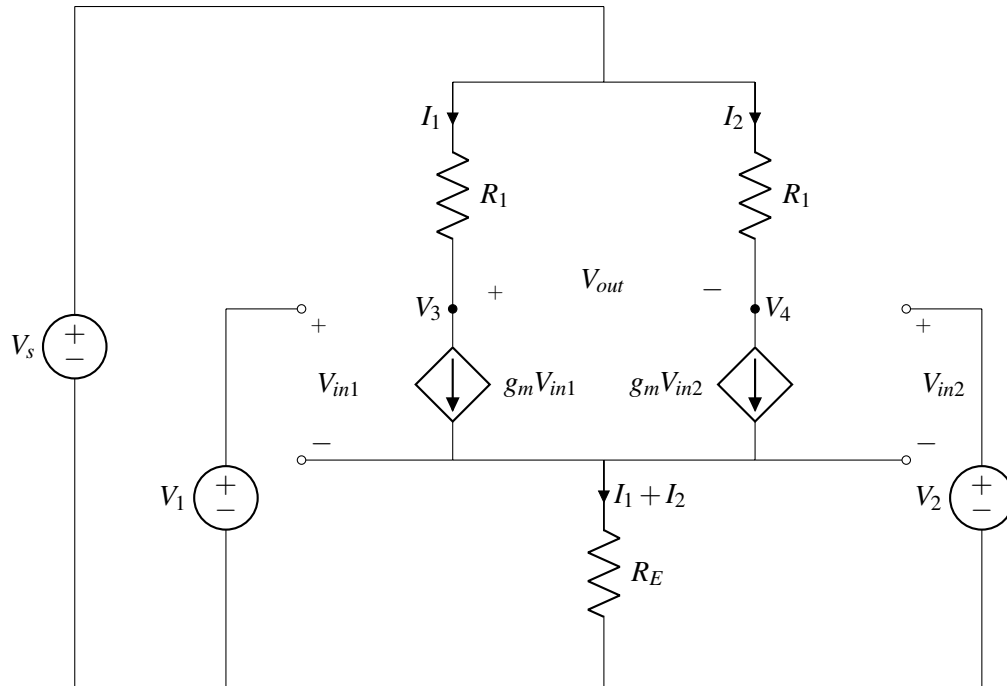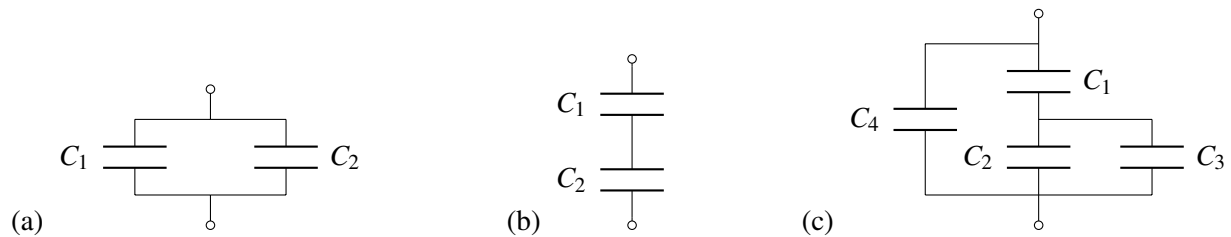**1. Superposition**

(a) For the circuit above, first calculate V_{out} with only V_s on?

(b) Now calculate V_{out} with only V_1 on. Repeat this with only V_2 on.

(c) Let's now turn on V_s, V_1 and V_2. What is the output V_{out}? What does this circuit do to arbitrary input voltages?

2. Derive Series and Parallel Caps!

Derive C_{eff} for the following diagrams.

(a) (b) (c)

3. Voltages across Capacitors

For the circuits given below, calculate the voltage across the capacitors at steady state. Also, calculate the charge and energy stored in each capacitor. Let $R_1 = 1k\Omega$, $R_2 = 2k\Omega$, $C_1 = 1\mu F$, $C_2 = 3\mu F$, $V_s = 1V$.

(a)

(b)

(c)