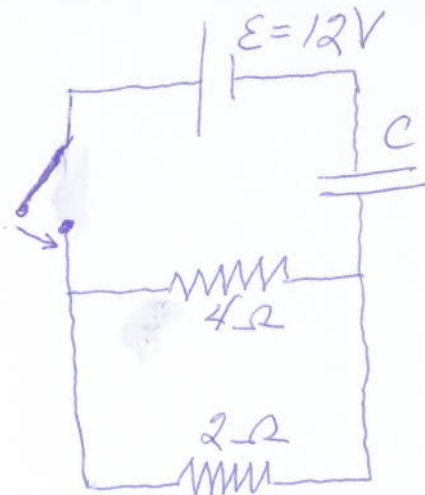


- 1) Consider the circuit drawn below. At  $t=0$ , the switch is closed. What is the current thru the 4 ohm resistor? What is it thru the 2 ohm resistor? Next, consider the case where you wait until the capacitor is fully charged. What will these two currents be then? [15 pts]



$$I(t) = \frac{\mathcal{E}}{R} e^{-t/RC}$$

$$\text{At } t=0 \Rightarrow I = \frac{\mathcal{E}}{R}$$

$$I_4 = \frac{\mathcal{E}}{R_4} = \frac{12}{4} = 3\text{A}$$

$$I_2 = \frac{\mathcal{E}}{R_2} = \frac{12}{2} = 6\text{A}$$

- When the capacitor is fully charged,  $t=\infty$

$$I(\infty) = 0, \quad I_2 = I_4 = 0$$