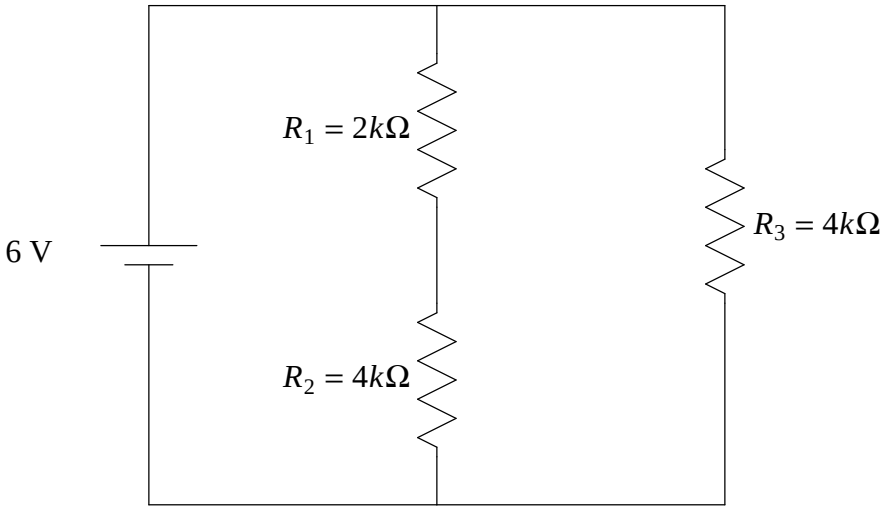
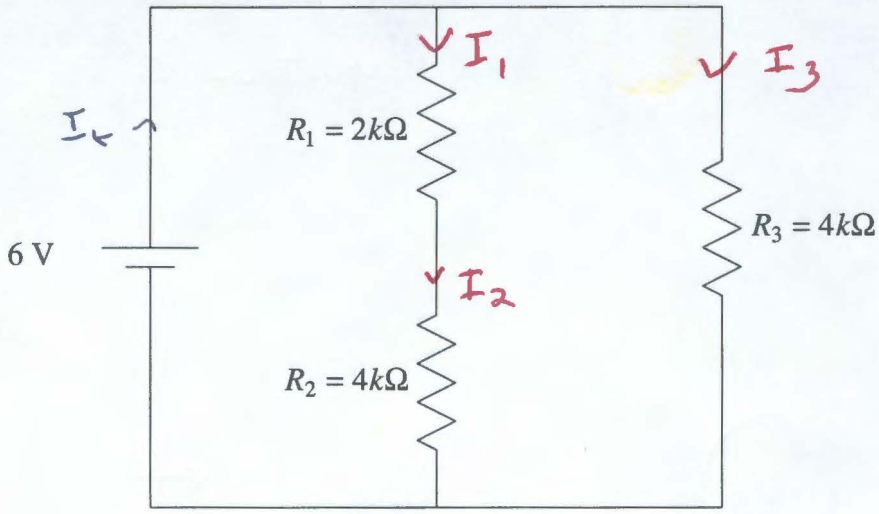
2. (30 pts.) Consider the following circuit.




a. (15 pts.) Find the total power delivered by the battery.

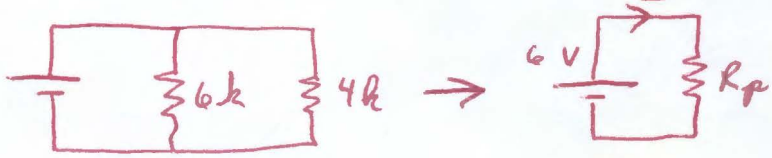
b. (15 pts.) Find the power dissipated in resistor $R_2$.

2. (30 pts.) Consider the following circuit.




a. (15 pts.) Find the total power delivered by the battery.

Equivalent circuits:




$\frac{1}{R_p} = \frac{1}{6k} + \frac{1}{4k} = \frac{5}{12k} \Rightarrow R_p = \frac{12}{5}k = 2.4k\Omega$

$I_t = \frac{6V}{2.4k\Omega} = 2.5mA$

$P = \mathcal{E} I = (6V)(2.5mA) = \boxed{15mW}$

b. (15 pts.) Find the power dissipated in resistor $R_2$.

Here's one way: $I_1 = \frac{6V}{2k+4k} = 1mA$

$I_1 = I_2$

$P_2 = I_2^2 R_2 = (1mA)^2(4k\Omega) = \boxed{4mW}$