

PHY 167 Recitation 2

Chapters 19 and 20.

March 17, 2019

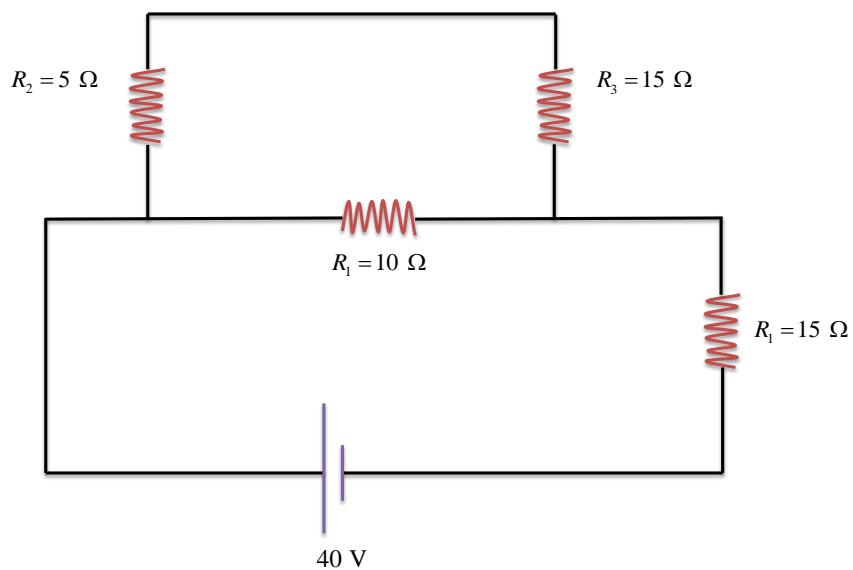


Figure 1: Picture of the setup in problem 1.

1.) (a.) Calculate the equivalent resistance for the circuit above and (b.) find the current that flows through each resistor.

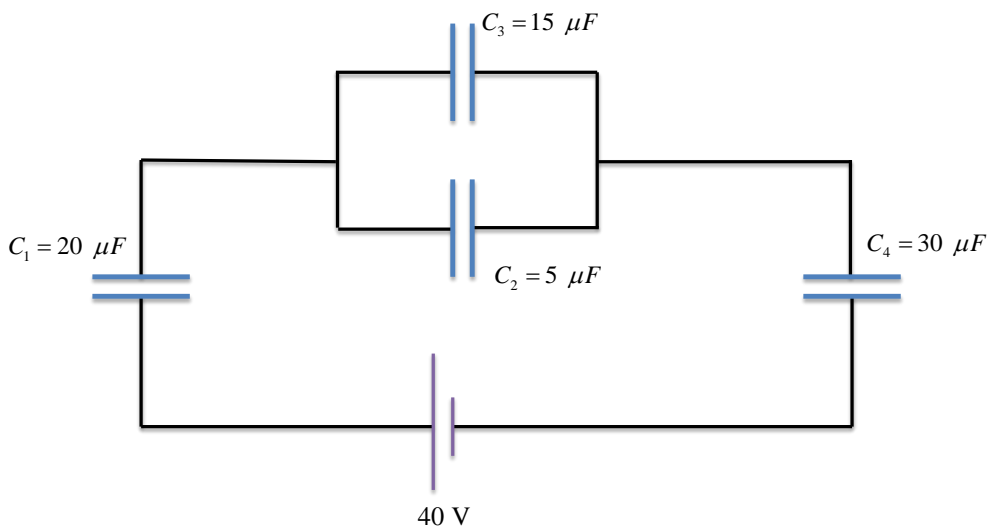


Figure 2: Picture of the setup in problem 2.

2.) (a.) Calculate the equivalent capacitance for the circuit above and (b.) find the charge on each capacitor.

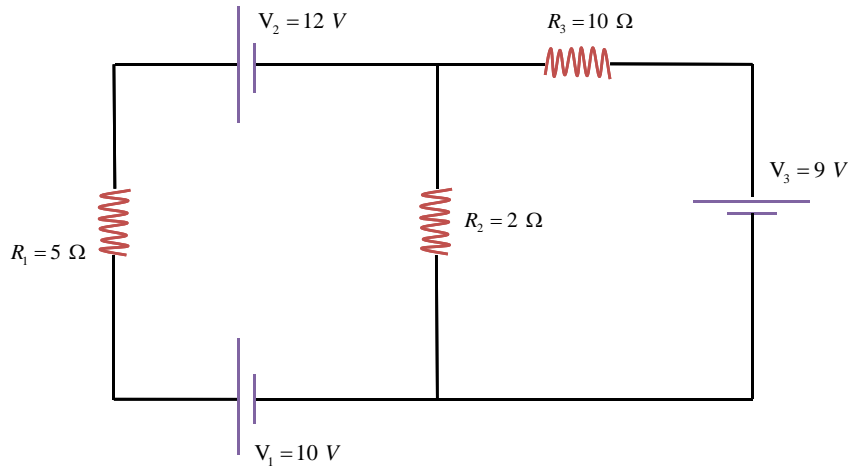


Figure 3: Picture of the setup in problem 3.

3.) Sketch the circuit above, labeling the currents I_1 , I_2 , I_3 going through resistors R_1 , R_2 , R_3 , respectively. Using Kirchoff's rules, write down the equations that would determine the currents I_1 , I_2 , I_3 and solve.

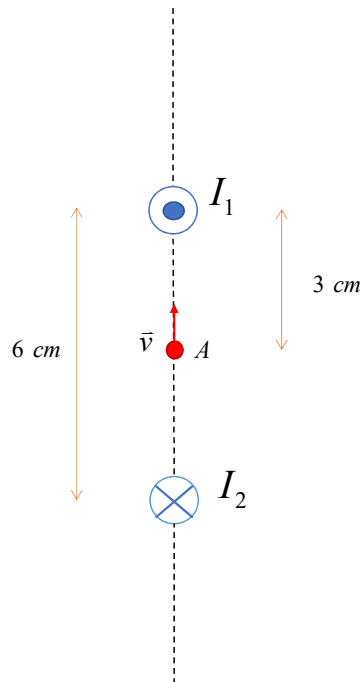


Figure 4: Picture of the setup in problem 4.

4.) Two long parallel wires carry current $I_1 = 25 A$ and $I_2 = 15 A$ as indicated above. They are separated by a distance of 6 cm.

(a.) A charge $q = -50 \mu C$ is placed at point A midway between the two wires with a velocity $v = 5 \times 10^3 m/s$ towards I_1 . Find the magnitude *and* direction of the magnetic force on the charge.

(b.) Find a point along the vertical line connecting I_1 and I_2 where the total magnetic field due to I_1 and I_2 is zero. How far away is that point from I_2 ? Draw the point on your diagram.