

Review Practice Problems
Physics 152

1. Two charged particles, each of charge q and mass m are separated by a distance d . We let both charges go. Find the speed of each charge when their separation is a) $2d$ and b) infinite.
2. When a 2-V battery is connected in series with two electrical elements, the current in the circuit is 200 mA. If a 50 Hz, 2-Volt AC source replaces the battery, the current becomes 100 mA. What are the values of the circuit elements? If the frequency becomes 1000 Hz, what is the new value of the current?
3. An equilateral triangle has sides of 10 cm. We place two point charges $Q_1 = 12\text{nC}$ and $Q_2 = -12\text{nC}$ at two vertices, as shown in the figure. Find the electric field at points a (4 cm away from Q_2 , as shown in the figure), b (4 cm away from Q_1 as shown in the figure), and the third vertex C

C

b

a

Q_2

Q_1