[redacted]

4. In a certain situation, the electric potential varies along the x-axis as shown in the graph of Figure 25.4. For each of the intervals ab, bc, cd, de, ef, fg, and gh, determine the x component of the electric field, and then plot E_x versus x. (Ignore behavior at the interval end points).

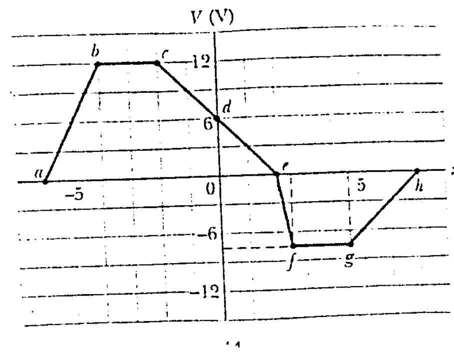

FIG 25.4

5. Two charged, parallel, flat conducting surfaces are spaced $d = 1.00\,cm$ apart and produce a potential difference $\Delta V = 625\,V$ between them. An electron is projected from one surface directly toward the second. What is the initial speed of the electron if it comes to rest just at th second surface?

6. Consider two widely separated conducting spheres, 1 and 2, the second having twice the diameter of the first. The smaller sphere initially has a positive charge q, and the larger one is initially uncharged. You now connect the spheres with a long thin wire. (a) How are the final potentials V_1 and V_2 of the spheres related? (b) Find the final charge q_1 and q_2 on the spheres in terms of q. (c) What is the ratio of te final surface charge density of sphere 1 to that of sphere 2?

Chapter 26

1. A spherical drop of mercury of radius R has a capacitance given by $C = 4\pi\epsilon_0 R$. If two such drops combine to form a single larger drop what is its capacitance?

2. Each of the uncharged capacitors in Figure 26.2 has a capacitance of $25.0\,\mu F$. A potential difference of $4200\,V$ is established when the switch is closed. How many coulombs of charge then pass through meter A?

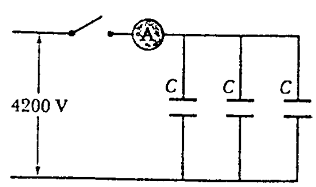

FIG. 26.2

3. In Figure 26.3, capacitors $C_1 = 1.0\,\mu F$ and $C_2 = 3.0\,\mu F$ are each charged to a potential difference of $V = 100\,V$ but with opposite polarity as shown. Switches A_1 and S_2 are now closed. (a) What is now the potential difference between points a and b? What are now the charges on (b) C_1 and (c) C_2?

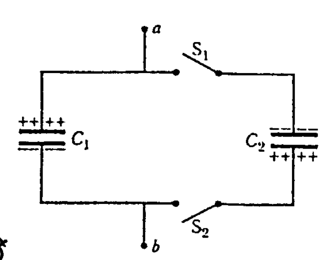

FIG 26.3