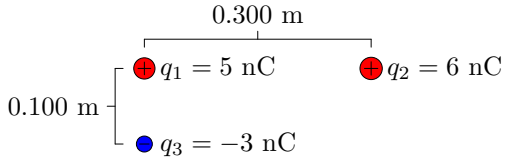
Homework 1

Chapter 19

Problem 7. Two identical conducting small spheres are placed with their centers $r = 0.300$ m apart. One is given a charge of $q_1 = 12.0$ nC and the other a charge of $q_2 = -18.0$ nC. (a) Find the electric force exerted by one sphere on the other. (b) Next, the spheres are connected by a conducting wire. Find the electric force between the two after they have come to equilibrium.

Problem 13. Three point charges are arranged as shown in Figure P19.13.
(a) Find the vector electric field $\mathbf{E}$ that q_2 and q_3 together create at the origin. (b) Find the vector force $\mathbf{F}$ on q_1.



Problem 16. Consider the electric dipole shown in Figure P19.16. Show that the electric field at a distant point on the $+x$ axis is $E_x \approx 4k_e qa/x^3$.