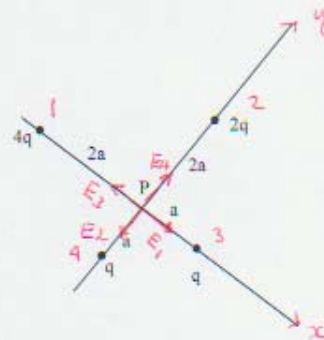


Phys10-2Rec
Quiz#5-Sect.22
Chapter 22

Instructor: Dr. A. Mekki

Name: Key Id: _____

Consider the charge distribution shown in the figure. Find the magnitude of the net electric field at point P.



Suppose $q > 0$
(Same result will be
obtained if $q < 0$)

$$E_1 = k \frac{4q}{(2a)^2} = \frac{kq}{a^2}$$

$$E_3 = \frac{kq}{a^2}$$

$$E_2 = \frac{k \cdot 2q}{(2a)^2} = \frac{kq}{2a^2}$$

$$E_4 = \frac{kq}{a^2}$$

$$E_x = E_1 - E_3 = 0$$

$$E_y = E_4 - E_2 = \frac{kq}{a^2} - \frac{kq}{2a^2} = \frac{kq}{2a^2}$$

$$\boxed{\vec{E} = 0 \hat{i} + \frac{kq}{2a^2} \hat{j}} \quad \text{N/C}$$