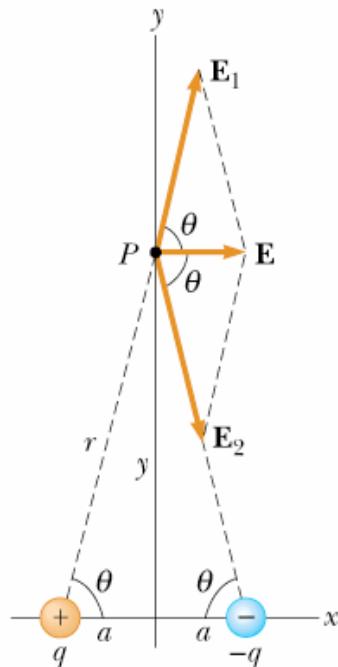# 232 Lecture Supplement 2

The total filed is $\mathbf{E} = \mathbf{E1} + \mathbf{E2}$ where

$$E_1 = E_2 = k_e \frac{q}{r^2} = k_e \frac{q}{y^2 + a^2}$$

$$E = 2 \cdot E_1 \cos\theta$$

$$\cos\theta = a/r = a/(y^2 + a^2)^{1/2}$$

$$E = 2 \cdot E_1 \cos\theta = k_e \frac{q}{y^2 + a^2} \cdot \frac{a}{(y^2 + a^2)^{1/2}}$$

$$= k_e \frac{2qa}{(y^2 + a^2)^{3/2}}$$

$$\approx k_e \frac{2qa}{y^3}$$