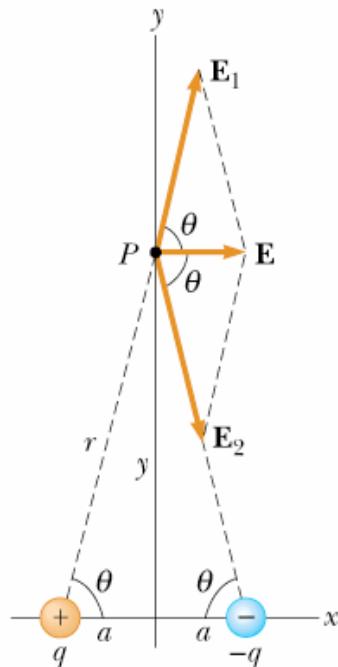


## 232 Lecture Supplement 2

The total field is  $\mathbf{E} = \mathbf{E}_1 + \mathbf{E}_2$  where

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



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

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

$$\begin{aligned} E &= 2 \cdot E_1 \cos \theta = k_e \frac{q}{y^2 + a^2} \cdot \frac{a}{(y^2 + a^2)^{1/2}} \\ &= k_e \frac{2qa}{(y^2 + a^2)^{3/2}} \\ &\approx k_e \frac{2qa}{y^3} \end{aligned}$$

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