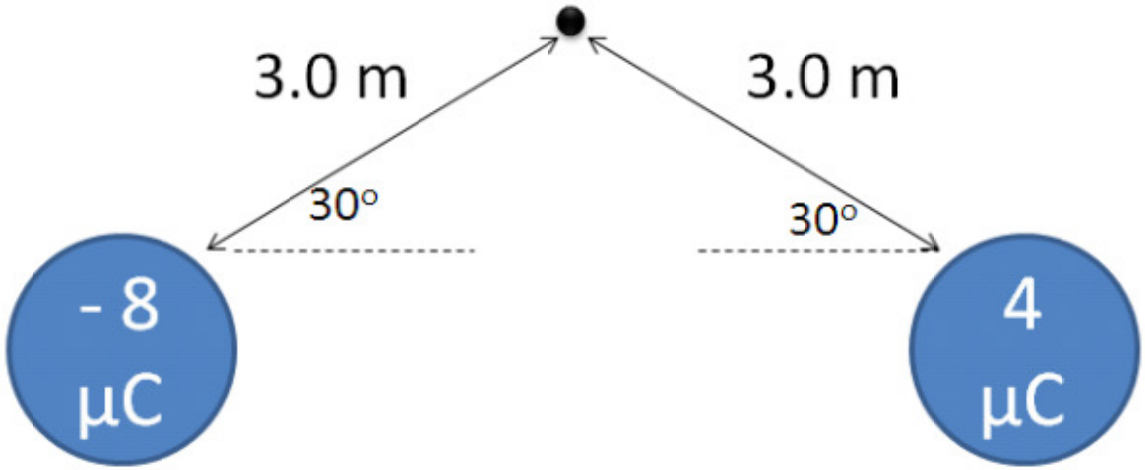
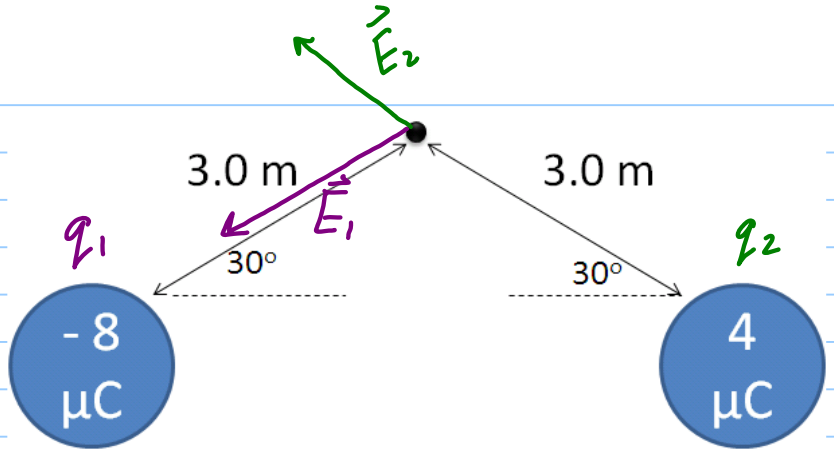
Note Title 28/03/2011

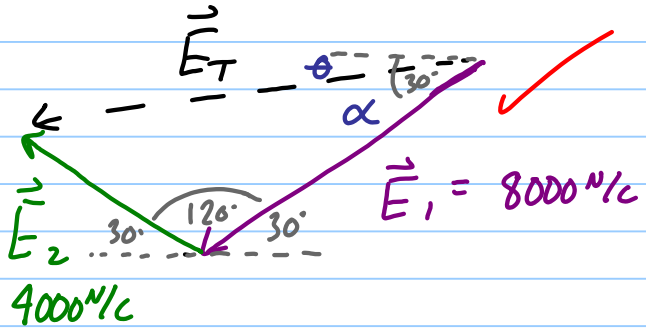
Find the magnitude and direction of the electric field at the point, P.





$$\vec{E}_1 = \frac{kq_1}{r_1^2} = \frac{(9\times10^9)(8\times10^{-6})}{(3.0)^2} = 8000\ N/C$$

$$\vec{E}_2 = \frac{kq_2}{r_2^2} = \frac{(9\times10^9)(4\times10^{-6})}{(3.0)^2} = 4000\ N/C$$



$$\vec{E}_T^{\,2} = \vec{E}_1^{\,2} + \vec{E}_2^{\,2} - 2\vec{E}_1\vec{E}_2\cos 120^\circ$$

$$E_T = 10600\ N/C$$

$$\frac{\sin\alpha}{4000} = \frac{\sin 120}{10600} \qquad \alpha = 19^\circ$$

$$\theta = 30^\circ - 19^\circ = \underline{11^\circ}$$