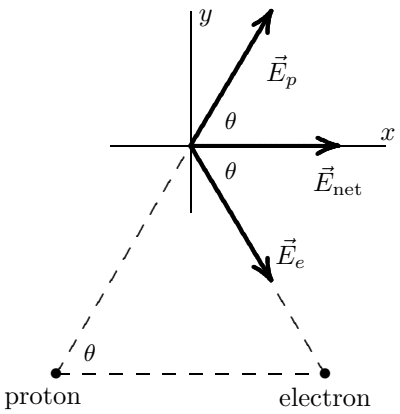
65. We denote the electron with subscript e and the proton with p. From the figure to the right we see that

$$\left|\vec{E}_e\right| = \left|\vec{E}_p\right| = \frac{e}{4\pi\varepsilon_0 d^2}$$

where $d = 2.0 \times 10^{-6}\,\text{m}$. We note that the components along the y axis cancel during the vector summation. With $k = 1/4\pi\varepsilon_0$ and $\theta = 60°$, the magnitude of the net electric field is obtained as follows:



$$\begin{aligned}
\left|\vec{E}_{\text{net}}\right| &= E_x = 2E_e\cos\theta \\
&= 2\left(\frac{e}{4\pi\varepsilon_0 d^2}\right)\cos\theta = 2k\left[\frac{e}{d^2}\right]\cos\theta \\
&= 2\left(8.99\times10^9\,\frac{\text{N}\cdot\text{m}^2}{\text{C}^2}\right)\left[\frac{(1.6\times10^{-19}\,\text{C})}{(2.0\times10^{-6}\,\text{m})^2}\right]\cos 60° \\
&= 3.6\times10^2\ \text{N/C}\ .
\end{aligned}$$