

1. A point charge of $+3.12 \times 10^{-6} \text{ C}$ is located at the origin. A second point charge of $-1.48 \times 10^{-6} \text{ C}$ is located at $x = 0.123 \text{ m}$. (a) What is the electric field due to the first charge at the location of the second charge? (b) What is the electric field due to the second charge at the location of the first charge? (c) Use the electric fields to find the force exerted on the first charge by the second charge and the force exerted on the second charge by the first charge.

Answer: (a) $1.86 \times 10^6 \text{ N/C}$ in $+x$ direction

2. What is the magnitude of a point charge chosen so that the electric field 0.750 m away has magnitude 2.30 N/C?

Answer: $1.XX \times 10^{-10} \text{ C}$

3. What is the electric field due to the proton at the location of the electron in a hydrogen atom? Take the orbital radius of the electron to be 0.053 nm.