34.3. **Model:** Electric and magnetic fields exert forces on charged particles. Assume the fields are uniform.
Solve: Substituting into the Lorentz force law,

$$\vec{F}_{\text{net}} = q\left(\vec{E} + \vec{v} \times \vec{B}\right) = \left(-1.6 \times 10^{-19}\ \text{C}\right)\left[2.0 \times 10^{5}\left(\hat{i} - \hat{j}\right)\ \frac{\text{V}}{\text{m}} + \left(5.0 \times 10^{6}\,\hat{i}\ \text{m/s}\right) \times \left(-0.10\hat{k}\ \text{T}\right)\right]$$

$$= -\left(3.2 \times 10^{-14}\right)\left(\hat{i} - \hat{j}\right)\ \text{N} - \left(8.0 \times 10^{-14}\,\hat{j}\right)\ \text{N} = \left(-3.2 \times 10^{-14}\,\hat{i} - 4.8 \times 10^{-14}\,\hat{j}\right)\ \text{N}$$