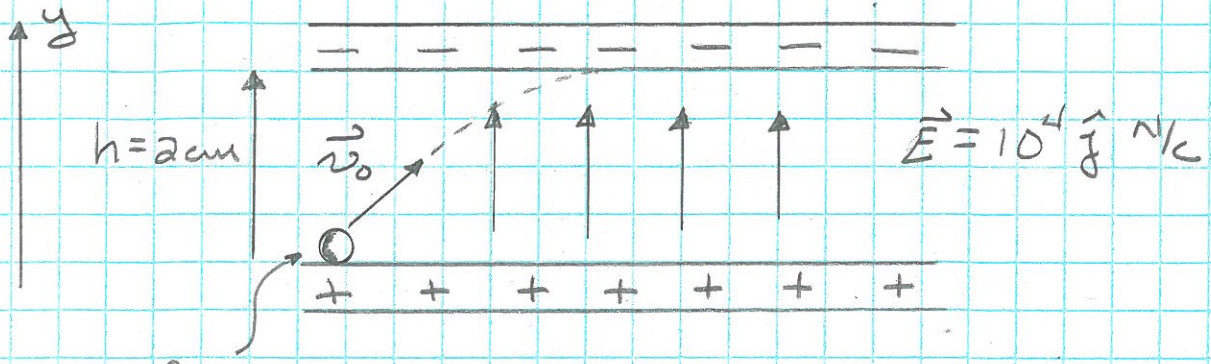
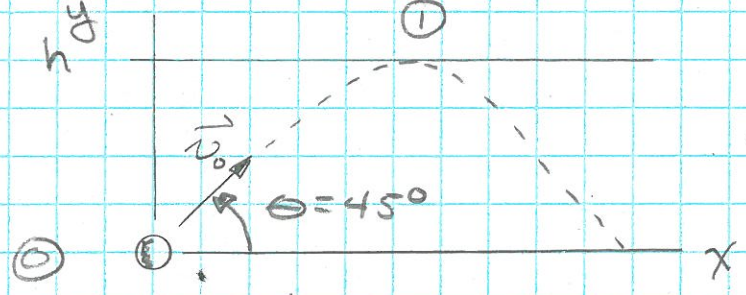


$q = -e$, $m = 9.11 \times 10^{-31}$ kg.

So: $\vec{F} = m\vec{a} = q\vec{E}$

$$\vec{a} = \frac{-e}{m}\vec{E} = -1.756 \times 10^{15}\,\hat{j}\ \text{m/s}^2$$

Now, kinematics to find v_0 to just reach upper plate:



$v_{y_0} = v_0 \sin\theta$ $\quad y_0 = 0$

$y_1 = h$ $\quad v_{y_1} = 0$

So:

$$v_{y_1}^2 = v_{y_0}^2 + 2a_y \Delta y \qquad \Delta y = y_1 - y_0$$

$$0 = v_{y_0}^2 + 2a_y y_1$$

$$= v_0^2 \sin^2\theta + 2a_y y_1$$

$$\therefore \quad v_0 = \sqrt{\frac{-2a_y y_1}{\sin^2\theta}} = \underline{1.185 \times 10^7\ \text{m/s}}$$