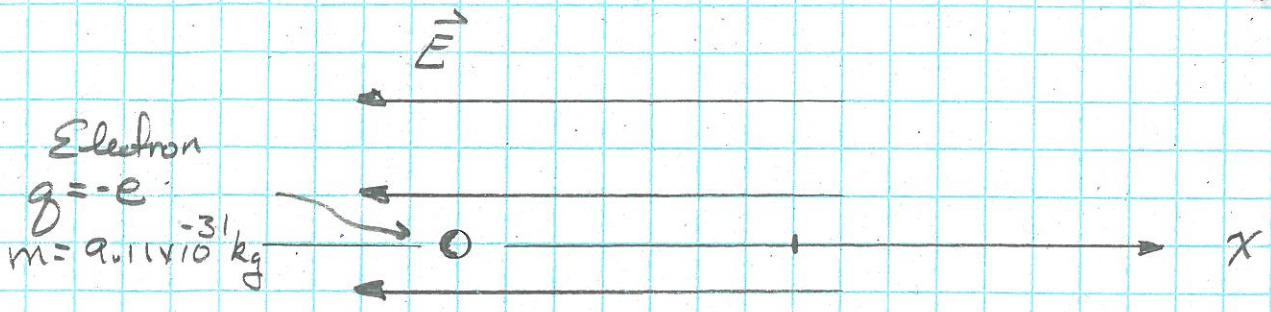

$x_0 = 0$ $\quad$ $x_1 = 1.2\text{ cm}$

$v_0 = 2 \times 10^7$ m/s $\quad$ $v_1 = 4 \times 10^7$ m/s

$t_0 = 0$ $\quad$ t_1

Acceleration is positive, so $\vec{E}$ points in negative x.

From kinematics:

$$v_1^2 = v_0^2 + 2a\Delta x \qquad \Delta x = x_1 - x_0$$

$$a = \frac{v_1^2 - v_0^2}{2x_1} = 5.0 \times 10^{16}\ \text{m/s}^2$$

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

So: $$\vec{E} = -\frac{m}{e}\vec{a} \qquad \vec{a} = 5.0 \times 10^{16}\,\hat{\imath}\ \text{m/s}^2$$

$$\vec{E} = -2.847 \times 10^5\,\hat{\imath}\ \text{N/C}$$

or, electric field strength is

$$|\vec{E}| = 2.847 \times 10^5\ \text{N/C}$$