Homework – 1, Quarter 4

Course: Physics

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1. A particle of charge $Q = -10^{-5}\ C$ is released from rest at the position A at a distance $x_A = 2\ m$ from the left charged plate, as shown in the figure.

(i) Draw the electric field between the charged plates.

(ii) If $E = 100\ N/C$ is the magnitude of the electric field in the region between the plates, determine the electric force $\vec{F}$ exerted on the charge Q from the field.

(iii) Find the acceleration of the charge Q if its mass is $m = 10^{-3}\ kg$.

(iv) Write the velocity of the charge as a function of the time t.

(v) Write the position of the charge as a function of the time t.

(vi) Calculate the speed of the particle when it reaches the plate on the right.

(vii) Calculate the time needed for the particle to reach the plate on the right.