6. Charges in B *(5 points)* There is an homogeneous, parallel to the z-axis magnetic field of inductance B in region $x > 0$. In region $x < 0$, there is no field. There are two particles of mass m and charge q. Initially, the particles have coordinates $y = z = 0$, and respectively $x = -L_0$ and $x = -2L_0$ (with $L_0 > 0$). Initial velocity of both particles is v, along the x-axis, towards the magnetic field. Neglect the electrostatic repulsion force of the two charges.

i) (1,5 pt) Sketch the trajectory of the first particle, and the dependance of its y-coordinate on time.

ii) (3,5 pt) Sketch the distance L between the particles as a function of time t, assuming that $\pi mv/Bq > L$. What is the minimal distance $L_{\min}$?