An electron is accelerated from rest through a potential difference of magnitude $V$ between infinite parallel plates $P_1$ and $P_2$. The electron then passes into a region of uniform magnetic field strength $B$ which exists everywhere to the right of plate $P_2$. The magnetic field is directed into the page.

(a) On the diagram above, clearly indicate the direction of the electric field between the plates.
(b) In terms of $V$ and the electron’s mass and charge, determine the electron’s speed at plate $P_2$.
(c) Describe in detail the motion of the electron through the magnetic field and explain why the electron moves this way.
(d) If the magnetic field remains unchanged, what could be done to cause the electron to follow a straight-line path to the right of plate $P_2$?