Determine the magnitude and direction of the force on a proton in each of the following situations. Describe qualitatively the path followed by the proton in each situation and sketch the path on each diagram. Neglect gravity.

(a) The proton is released from rest at the point P in an electric field \( E \) having intensity \( 10^4 \) newtons per coulomb and directed up in the plane of the page as shown below.

(b) In the same electric field as in part (a), the proton at point P has velocity \( v = 10^5 \) meters per second directed to the right as shown below.

(c) The proton is released from rest at point P in a magnetic field \( B \) having intensity \( 10^{-1} \) tesla and directed into the page as shown below.

(d) In the same magnetic field as in part (c), the proton at point P has velocity \( v = 10^5 \) meters per second directed to the right as shown below.