1. A point charge $+Q$ is located at the origin, and a point charge $-Q$ is located at $(x,y) = (0,L)$.

(a) Find the electric field at point $P$, which is a distance $L$ away from both $+Q$ and $-Q$, as shown in the diagram. Express your answer in **unit vector notation** using the coordinate system given.

(b) A point charge $-2Q$ is placed at point $P$. Find the Coulomb force on the charge $-2Q$ due to the other two charges. Express your answer in **unit vector notation** using the coordinate system given.