Answer on Question #68716, Physics / Electromagnetism

Question:
A particle of M mass and Q charge is thrown to such a area where same gravitational and electric field are situated. What is the way of this particle?

Solution:
Lets assume that the only forces acting on the particle is gravitational and electric forces
So, according to 2nd Newton's law: $M\vec{a} = M\vec{g} + q\vec{E}$
The external force is constant and doesn't depend on coordinate or speed.

During the flight particle will accelerate with $a = \vec{g} + \frac{q\vec{E}}{M}$
If initially it has velocity $\overrightarrow{v_0}$, then at a time t, it will have velocity $\vec{v}(t) = \overrightarrow{v_0} + (\vec{g} + \frac{q\vec{E}}{M})t$
Its displacement vector: $\vec{r}(t) = \overrightarrow{r_0} + \overrightarrow{v_0}t + \frac{\left(\vec{g}+\frac{q\vec{E}}{M}\right)t^2}{2}$