

## LORENTZ FORCE Application

(Reposted 3-11-2022)

magnetic field component

Electric field component

$$\text{LORENTZ FORCE } \vec{F} = q (\vec{v} \times \vec{B} + \vec{E})$$

The electric field in a region of space is  $\vec{E} = -4\hat{e}_y \frac{\text{V}}{\text{m}}$  and the magnetic flux density is  $\vec{B} = 5\hat{e}_x \frac{\text{Wb}}{\text{m}^2}$ . If a particle with mass 1 kg and charge 1 C starts from rest at point  $(2, -3, 4)$ , calculate a) its velocity at  $t = 1 \text{ s}$ , b.) its location at  $t = 1 \text{ s}$ , and c) its kinetic energy at  $t = 1 \text{ s}$ .