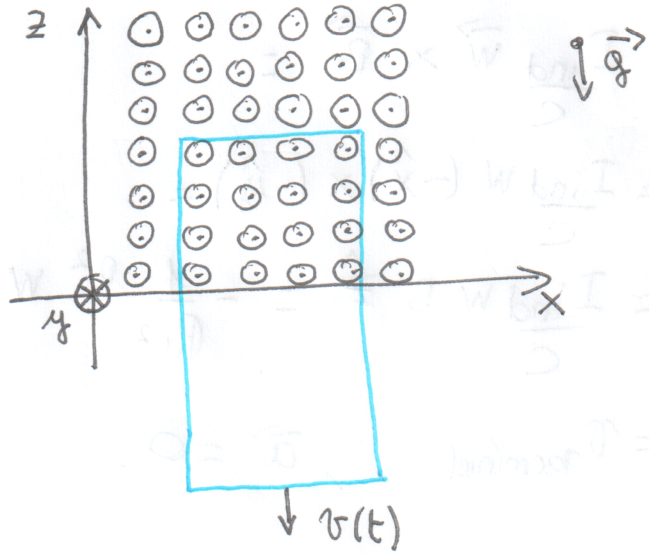
1)



Faraday's law $\mathcal{E} = \oint \vec{E}\cdot d\vec{l} = -\frac{1}{c}\frac{\partial \Phi_B}{\partial t} = -\frac{1}{c}\frac{\partial}{\partial t}\int_S \vec{B}\cdot d\vec{a}$ (1)

- Ohm's law: $\mathcal{E} = I_{ind} R$ (2)

- $\Phi_B = \int_S \vec{B}\cdot d\vec{a} = B\int_S da = BzW$ (3)

  $\vec{B} = B\hat{y}$
  $d\vec{a} = da\,\hat{y}$

$$\frac{\partial \Phi_B}{\partial t} = BW\frac{dz}{dt} = BWv(t) < 0$$

$v(t) < 0$

As the loop falls the magnetic flux decreases

- Substitute (2) + (3) in (1):

$$I_{ind} = -\frac{1}{Rc} BWv(t) > 0$$

The induced current flows counterclockwise, increasing the magnetic flux

- The force on the loop is:

$$\vec{F} = \vec{F}_{ind} + \vec{F}_g = ma$$