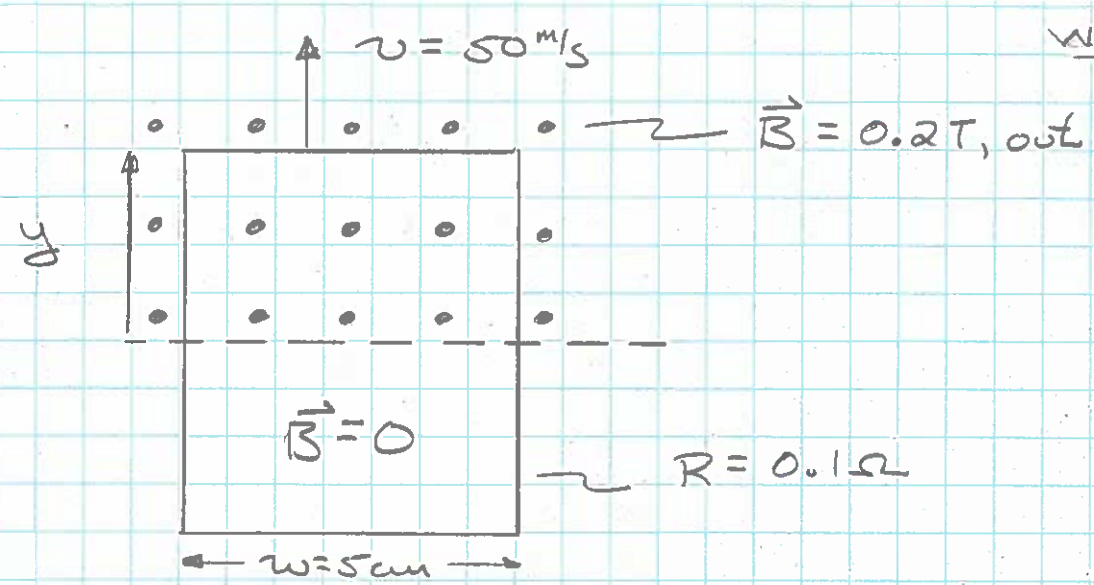

Induced EMF: $\mathcal{E} = \left| \frac{d\Phi}{dt} \right|$

$$\Phi_m = \int \vec{B} \cdot d\vec{A} = BA = Bwy$$

So:

$$\mathcal{E} = \left| \frac{d}{dt}(Bwy) \right| = Bw\frac{dy}{dt} = Bwv$$

and, $\mathcal{E} = 0.5\,V$

So, $I_{in} = \frac{\mathcal{E}}{R} = \underline{5\,A}$

Now:

WTF? Flux is increasing

∴ $\vec{B}_{in}$ is in, and

I_{in} is CW