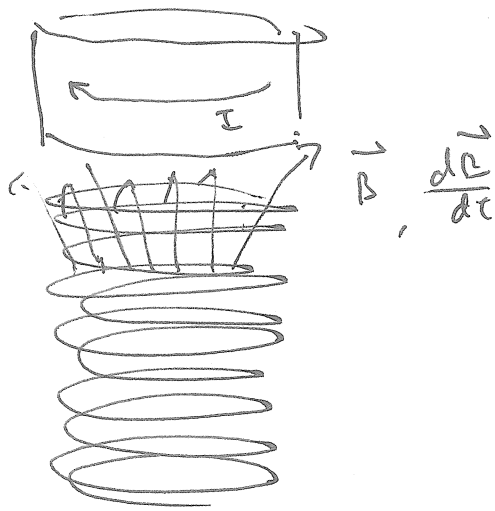
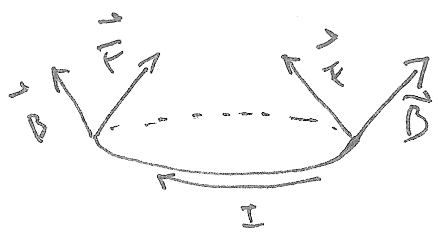
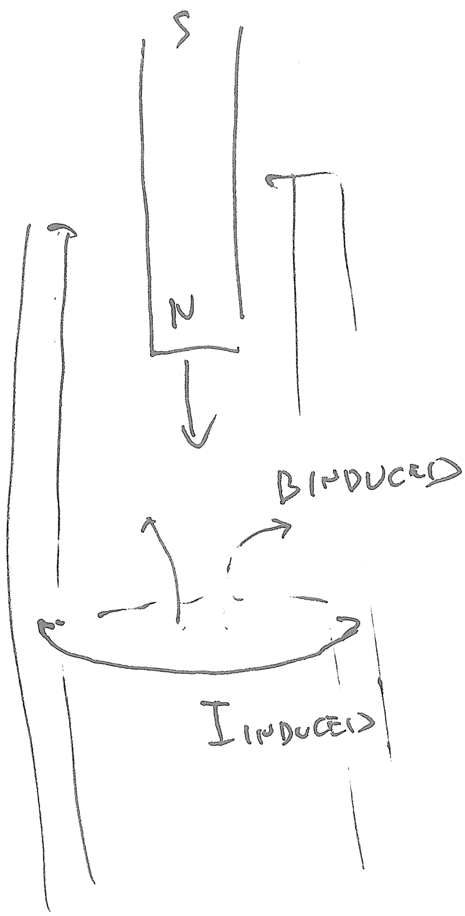
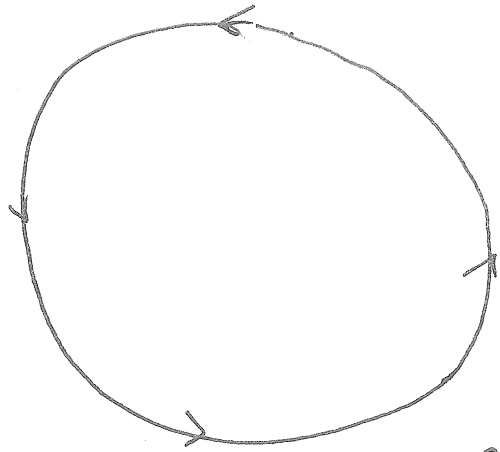

I
$\vec{B}$
$\frac{d\vec{B}}{dt}$


$\vec{B}$
$\vec{F}$
$\vec{F}$
$\vec{B}$
I


S
N
B INDUCED
I INDUCED

$\otimes \vec{B}$

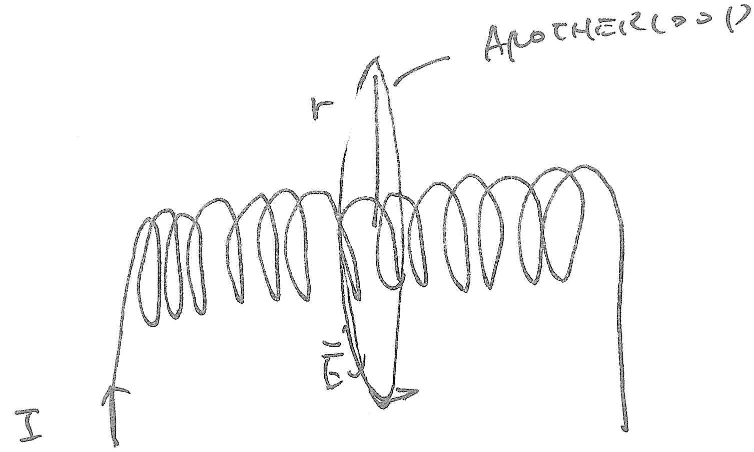
$\otimes \dfrac{d\vec{B}}{dt}$



INDUCED CURRENT

$$\vec{J} = \sigma \vec{E}$$

$$\oint \vec{E} \cdot d\vec{s} = \mathcal{E} = -\frac{d\Phi_B}{dt}$$

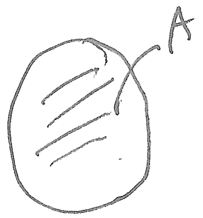



$$\oint \vec{E} \cdot d\vec{s} = -\frac{d\Phi_B}{dt}$$

$I = I_{MAX} \cos(\omega t)$

$\hat{B} = \mu_0 n I$ $\qquad$ n: COIL DENSITY

$B = \mu_0 n I_{MAX} \cos(\omega t)$




A: CROSS SECTIONAL AREA OF SOLENOID

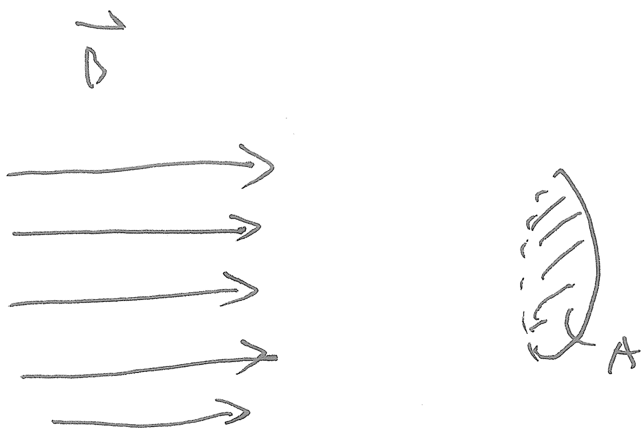
$\Phi_B = B \cdot A = \mu_0 n A I_{MAX} \cos(\omega t)$

$$\frac{d\Phi_B}{dt} = -\mu_0 n A \cdot I_{MAX} \omega \sin(\omega t)$$

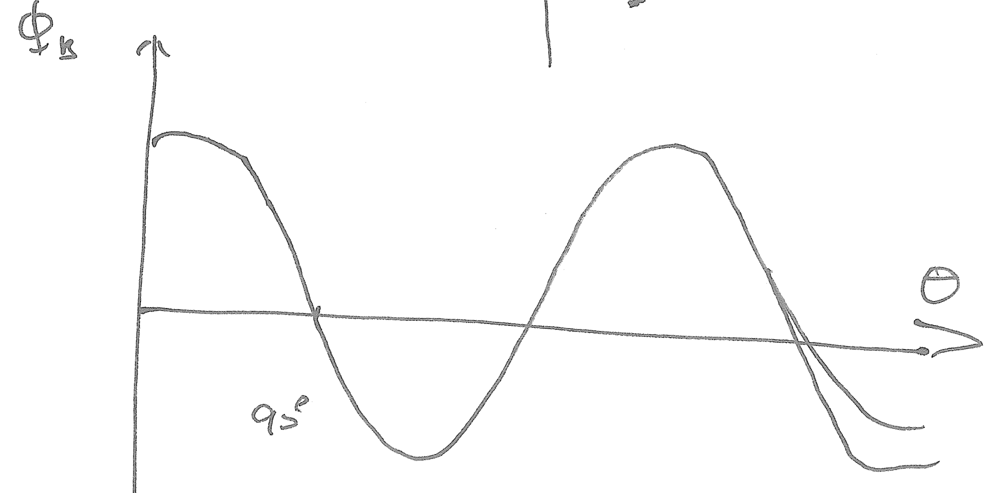
$$\oint \vec{E} \cdot d\vec{s} = E \cdot 2\pi r = -\frac{d\Phi_B}{dt}$$

$$2\pi r\, E = +\mu_0 n A I_{MAX} \omega \sin(\omega t)$$

$$E = \frac{\mu_0 n A}{2\pi r} I_{MAX} \omega \sin(\omega t)$$







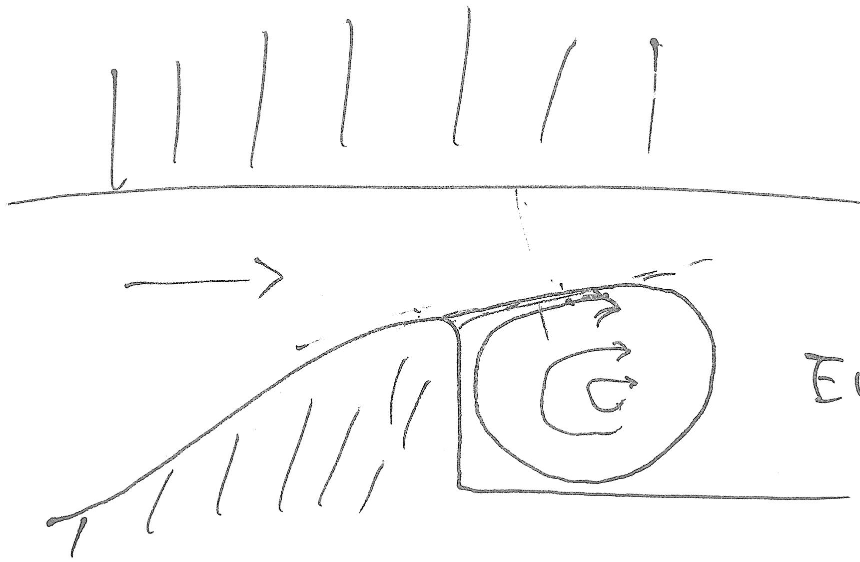

$$\Phi = BA \cos\theta$$

$$\theta = \omega t$$

$$\Phi = BA \cos(\omega t)$$

$$\frac{d\Phi}{dt} = -BA\omega \sin(\omega t)$$

$$\mathcal{E} = -\frac{d\Phi_B}{dt} = BA\omega \sin(\omega t)$$



EDDY IN RIVER