

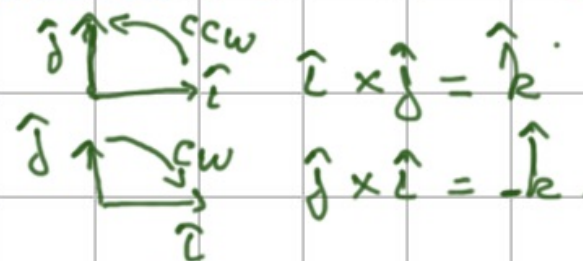
## Formula Sheet:

$$\vec{F}_B = q(\vec{v} \times \vec{B})$$

$$|\vec{F}_B| = q |\vec{v}| |\vec{B}| \sin\theta$$

angle between  
 $\vec{B}$  and  $\vec{v}$ .

; direction: use R.H.R.



$$\vec{F}_B = I(\vec{\ell} \times \vec{B})$$

$$|\vec{F}_B| = I |\vec{\ell}| |\vec{B}| \sin\theta$$

$$\vec{\mu} = I \cdot \vec{A}$$

$$\vec{\tau} = (\vec{\mu} \times \vec{B}) = IAB \sin\theta$$

$$\vec{F}_B = m \vec{a}_c \quad ; \quad \vec{a}_c = \frac{v^2}{R}, \quad R = \frac{mv}{qB}$$

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- straight wire:  $B = \frac{\mu_0 I}{2\pi r}$
- wire loop:  $B = \frac{\mu_0 I}{2r}$
- solenoid:  $B = n\mu_0 I = \frac{N}{l}\mu_0 I$

$$\cdot \Phi_B = \vec{B} \cdot \vec{A} = |\vec{B}| \cdot |\vec{A}| \cos\theta$$

$$\cdot \mathcal{E}_{\text{ind}} = -N \frac{d\Phi_B}{dt} = -N \frac{d(B \cdot A \cdot \cos\theta)}{dt}$$

$$\cdot \mathcal{E}_{\text{ind}} = L \frac{di}{dt} \quad ; \quad L = \mu_0 n^2 \cdot \text{Volume}$$

$$\cdot U_B = \frac{1}{2} L I^2 \quad , \quad u_B = \frac{U_B}{V} = \frac{1}{2\mu_0} B^2$$

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$$\bullet \frac{\mu_0}{4\pi} = 10^{-7} \text{ ; } \mu_0 = 4\pi 10^{-7} \text{ Tm/A.}$$

$$\bullet e = 1.6 \times 10^{-19} \text{ C. , } m_e = 9.11 \times 10^{-31} \text{ kg.}$$

$$\text{cm} \rightarrow 10^{-2} \text{ m}$$

$$\mu \rightarrow 10^{-6} \text{ m}$$

$$\text{n} \rightarrow 10^{-9} \text{ m}$$

$$\text{g} \rightarrow 10^{-3} \text{ kg.}$$

$$\text{M} \rightarrow 10^6 \text{ m.}$$

$$A_{\text{disk}} = \pi r^2$$

$$A_{\text{sphere}} = 4\pi r^2.$$

$$\bullet E = K + U.$$

$$\bullet K = \frac{1}{2}mv^2, U_e = qV_{\text{olt}}.$$

$$\bullet v^2 = v_0^2 + 2a\Delta x.$$

$$\bullet \Delta y = \frac{1}{2}at^2 + v_0t.$$

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