

ch 20 28, 29, 34, 44, 48, 52, 69
in other pdf

28) $q, +\hat{x}, v$

~~$\vec{E} \hat{y}$~~ find \vec{B}

$$\vec{F} = q\vec{E} + q\vec{v} \times \vec{B} = 0$$

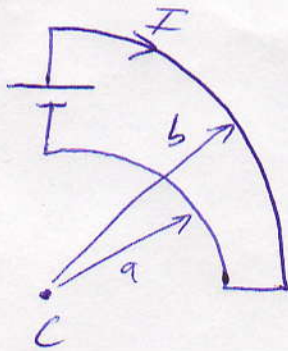
$$|\vec{E}| = \frac{1}{v} |\vec{v} \times \vec{B}| = vB$$

put B in the $-\hat{z}$

$$|B| = \frac{|\vec{E}|}{v}$$

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48)



$$B_{\text{loop}} = \frac{N\mu_0}{4\pi} \frac{2\pi R^2 I}{(z^2 + R^2)^{3/2}}$$

$$B_{\text{net}} = B_a - B_b$$

$$z = 0$$

$$N = \frac{1}{4}$$

$$R = b, a$$

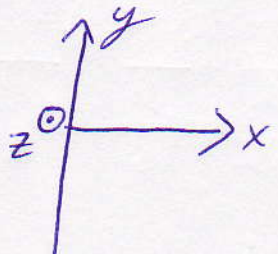
$$B_b = \frac{1}{4} \frac{\mu_0}{4\pi} \frac{2\pi \frac{1}{4} b^2 I}{b^3} = \frac{\mu_0 I}{8b}$$

$$B_a = \frac{\mu_0 I}{8a}$$

and the direction is \odot
since a is smaller than b

486) $v \rightarrow q = -e$

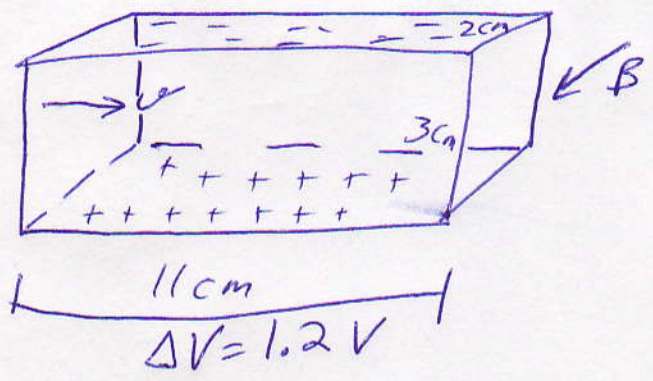
$$\vec{F} = q \vec{v} \times \vec{B}$$



$|q v B| = |F|$ $\vec{v} \times \vec{B}$ is in the $-\hat{y}$

but q is negative, so, \vec{F} is in the \hat{y} direction

69)



$q = +e$

$n = 7 \times 10^{23}$ $B = 1.8 T$

$u = 3 \times 10^{-5} \frac{m}{s}$
 $\frac{V}{m}$

$$I = q i = q n A u E$$

$$E = \frac{\Delta V}{.11 m}$$

$$I = e (7 \times 10^{23}) (.06) (3 \times 10^{-5}) \left(\frac{1.2}{.11} \right)$$

$$u = \frac{I}{q n A} = \frac{q n A u E}{q n A} = u E = 3.27 \times 10^{-4} \frac{m}{s}$$

$E_{\perp} = u B$

$\Delta V_{Hall} = E_{\perp} h = 1.767 \times 10^{-5}$

voltmeter is backwards
 So it reads
 $-1.767 \times 10^{-5} V$