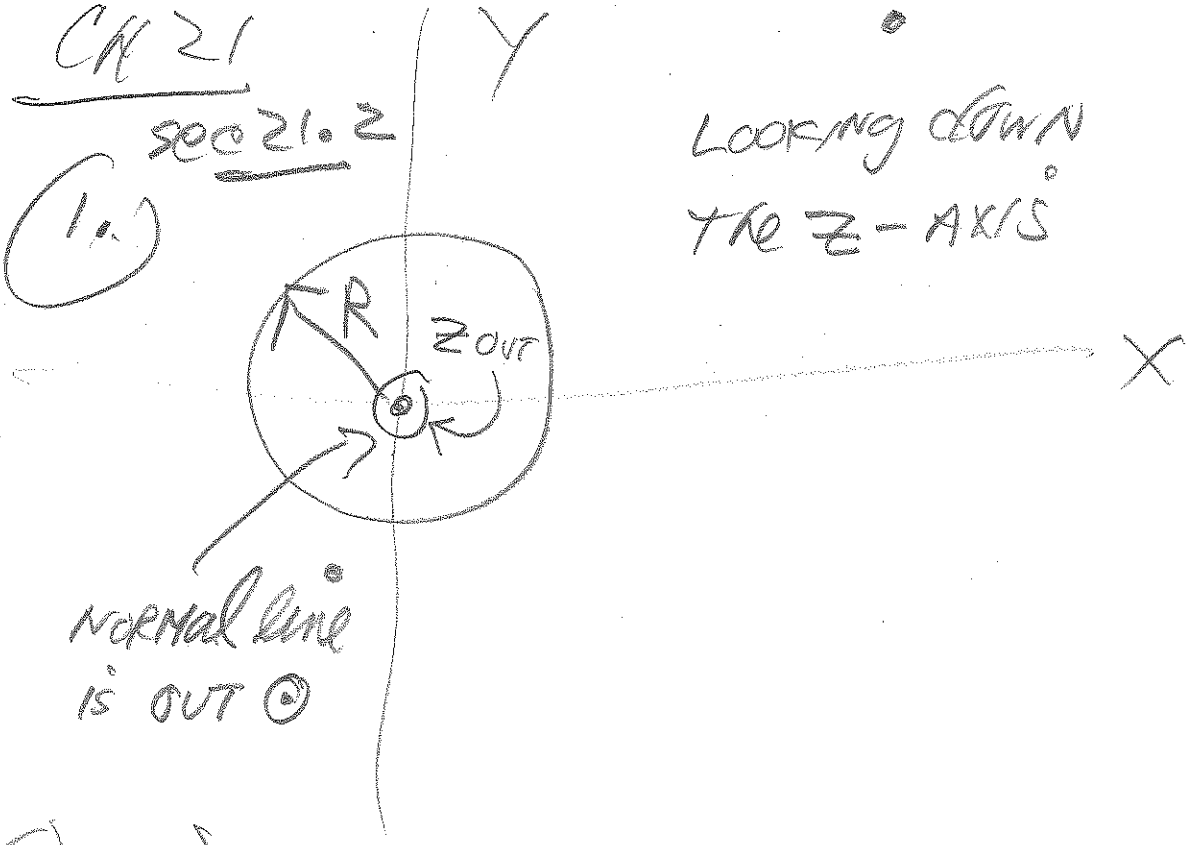
3-26-14

CH 21

SEC 21.2



(a.) $\vec{B}$ is out ⊙

$\Phi = B \cdot A \cdot \cos 0$

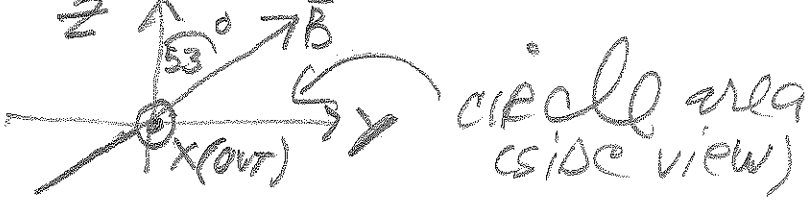
$A = \pi R^2$

$= B \cdot A$

$= B \cdot \pi R^2$

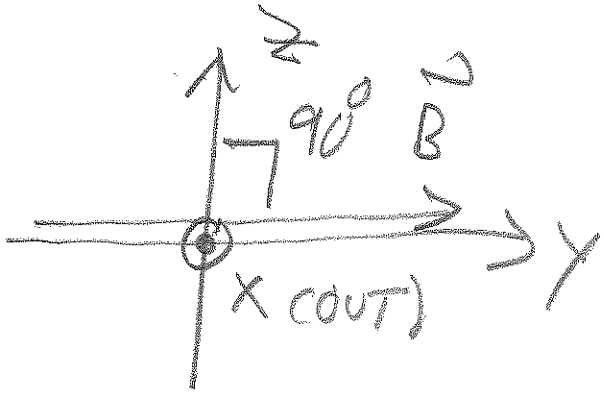
(b.) $\Phi_B = B \cdot A \cdot \cos 53.1 < B \cdot A$

side view

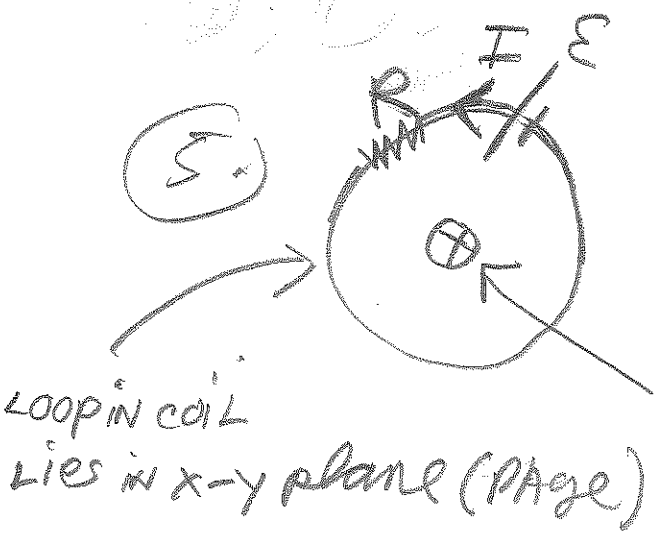


c) $\Phi_B = 0$ (EXPLAIN THIS)

$B \cdot A \cdot \cos 90^\circ = 0$



See 21.3



$|\vec{B}| = B$

$|\varepsilon| = N \cdot A \left|\frac{\Delta B}{\Delta t}\right| = I \cdot R$

OHM'S LAW

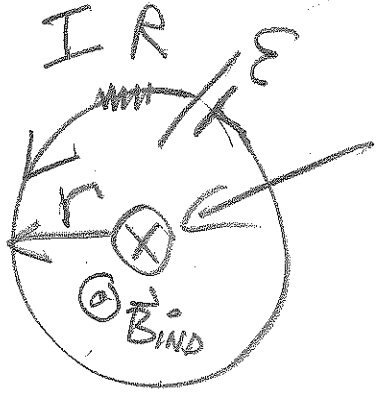
Announcement:

alert — test 3 = Fri. before spring break (April 11)
[on ch 21, 22]

Sec 21.3

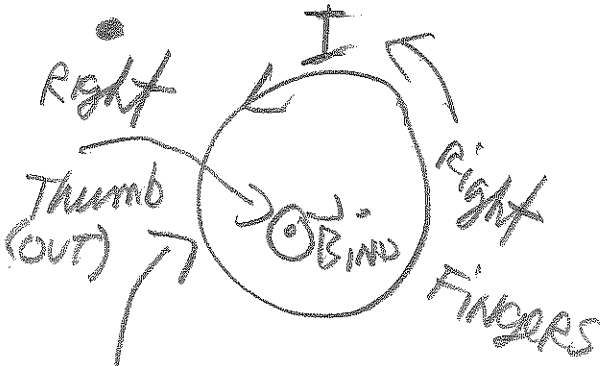
(5.)

ch 21, 22, (ch 23 e.c.)



$|\vec{B}|$ increasing.

$\vec{B}_{IND}$ tries to cancel $\vec{B}$.



CH 20
Fig. 20.7 (c.)

$$I = \frac{|\mathcal{E}|}{R} = N \cdot A \cdot \frac{\Delta B}{\Delta t} / R$$

$$I = \frac{N \cdot \pi r^2 \left|\frac{\Delta B}{\Delta t}\right|}{R}$$

solve for $\left|\frac{\Delta B}{\Delta t}\right|$ (I)

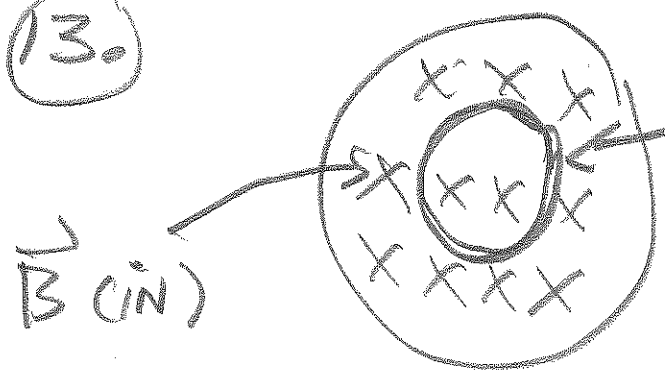
4

$$I \cdot R = |\mathcal{E}| = N \cdot \pi r^2 \left| \frac{\Delta B}{\Delta t} \right|$$

FIND $\frac{\Delta B}{\Delta t}$

21.4

13.



(a.) $|\vec{B}|$ increases

HINT: see #5

(b.)

$|\vec{B}|$ decreasing

Use CH 20 to get I-direction (Fig 20.7©)

1. What voltage difference will produce a current 0.50 (A) through a 4.0 ohm resistor?

(a) 16 (V) (b) 2.0 (V) (c) 1.0 (V)

2. What power dissipation occurs when a 0.50 (A)-current flows through a 4.0 ohm resistor?

(a) 1.0 (W) (b) 0.25 (W) (c) 16 (W)

3. Four equal resistors connected in series have the same current and the same voltage drop across each resistor. True or False. (a) True (b) False

4. Four unequal resistors connected in series have different currents and different voltage drops across each resistor. True or False. (a) True (b) False

5. Four unequal resistors connected in parallel have the same current but different voltage drops across each resistor. True or False. (a) True (b) False

6. Two unequal capacitors connected in parallel have different charges on their positive plates but different voltage drops across each capacitor. True or False. (a) True (b) False

7. Two unequal capacitors connected in series have the same charge on each positive plate but different voltage drops across each capacitor. True or False. (a) True (b) False

8. A resistor R and capacitor C in series are connected across the terminals of a battery at constant voltage ε. After the switch is closed to complete the RC circuit, the charge Q on the positive plate of the capacitor increases linearly with time t. True of False .
(a) True (b) False

9. Magnetic field lines come out of the south pole and enter the north pole of a magnet.
(a) True (b) False

10. The magnetic force on a moving charged particle is perpendicular to the velocity of the particle. (a) True (b) False

11. The magnetic force on a moving charged particle is perpendicular to the magnetic field. (a) True (b) False

12. A straight segment of wire of length L carries a current I in an external magnetic field. The wire segment will experience a maximum magnetic force if (a) the magnetic field is parallel to the wire (b) the magnetic field is perpendicular to the wire.

13. A charged particle moves in an external magnetic field. The charged particle will experience a maximum magnetic force if (a) the magnetic field is parallel to the

charge's velocity (b) the magnetic field is perpendicular to the charge's velocity