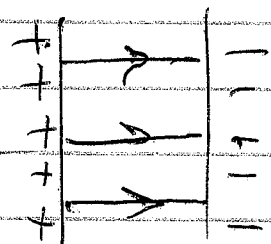
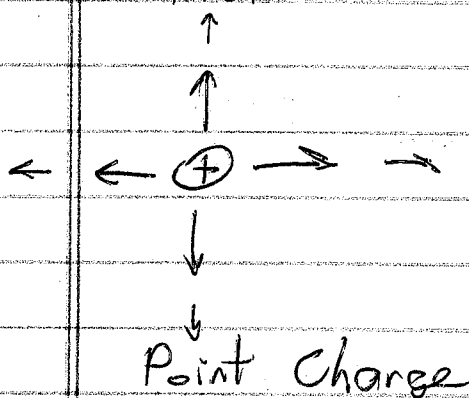


Magnets! Generators of Magnetic Field

E-Fields vs B-Fields (magnetic fields)

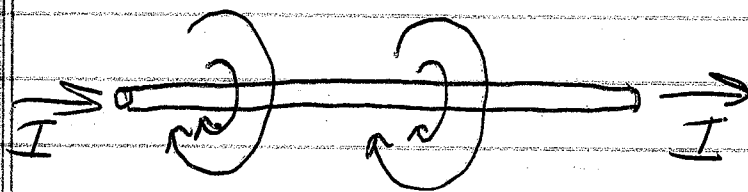
- Both are Vector Fields - like virtual wind.
- Generated by sources.
 - E generated by \oplus and \ominus charges.
 - B generated by moving charges (i.e. by currents)
- Both can generate each other to form electromagnetic waves.

E-Fields

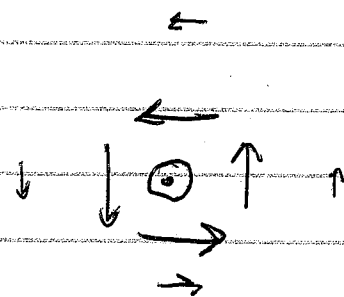


Capacitor

B-Fields (Magnetism)



(Side View)



I flowing toward us
(End View)

②

RHR: Thumb is current (I)
Curled fingers are magnetic field (\vec{B})

Observations about \vec{B} :

- Perpendicular to source
- Perpendicular to \hat{r} , i.e. doesn't point toward or away from source.

Describing 3D Directions

<u>Relative</u>	<u>Geographic</u>	<u>Math</u>	<u>Paper</u>
R/L	E/W	+/- x	R/L
F/B	N/S	+/- y	Up/Down Top/Bottom
Up/Down	Up/Down	+/- z	Out/In Toward/Away \odot / \otimes

\odot = Arrow pointing toward viewer

\otimes = Feathers of arrow pointing away.

Ex: An electron is falling down in a region where B points north. ("North" is not "Up")

(Map View)



(North-facing camera)

