Board Meeting Gamma:

Electric Field & Flux (Gauss's Law)

Physics 204

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(1) Board Meeting PROCEDURES.

A) Take at least one large white board for each group.

With as much clarity, completeness, color, vivacity and verity as possible,

On group white boards, respond to all the PROBLEMS.

You may certainly use more than one white board per group.

B) Leave AT LEAST 45 minutes to 1 hour for the following:

Gather in an approximate circle, all Boards facing in.

Discuss the Boards. Note that the Instructor, however, will play a noticeably minimal role. Whenever s/he is silent and whenever you wonder what to discuss, do the following:

  i. Begin by attempting to identify and reconcile disagreements among boards,

  ii. Freely but respectfully follow whatever conceptual/conversation paths emerge from the attempt to reconcile boards.

  iii. Emphasize Depth over Breadth:

    Once the class discovers that it is disagreement or confusion over a particular and fundamental point~~

    whether or not this point was originally intended for discussion~~

STICK WITH THE CONCEPT UNTIL YOU GROW EMOTIONAL INVESTED, BUT

  iv. Do *not* interrupt colleagues.

(2) The E-Field PROBLEMS

I. Find and express and demonstrate as vividly as possible the

DEFINITION OF ELECTRIC FLUX.

Provide examples & Pictures!

II. Using this definition for flux, find the ELECTRIC FLUX through the surface of a sphere, radius R, centered at a point charge of charge-m magnitude q.

III. What happens to the result obtained above if you:

a) Change the RADIUS of the sphere with which you surrounded the

point charge?

DEFEND your answer.

b) Change the SHAPE of the closed surface with which you surrounded

DEFEND YOUR ANSWER.

c) Change the number of point charges enclosed by your shape?

DEFEND YOUR ANSWER.

IV. To what extent can your result from (II) be generalized?
    That is, under what conditions (if any) might it NOT be true?