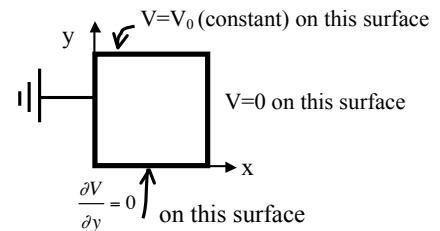Phys 3310, HW #7, Due in class Wed Feb 27.

Please read the Extra Credit question first! It may require planning on your part.
NOTE: Thursday Feb 28 is the first exam (7:30-9:15 PM) See our website for details. You may bring one side of one page of paper with your own hand written notes (I will also provide a cribsheet with the front and back flyleafs of Griffiths. It's on our website)

Q1. A square rectangular pipe (sides of length a) runs parallel to the z-axis (from -∞ to +∞)
The 4 sides are maintained with boundary conditions given in the figure. (Each of the 4 sides is insulated from the others at the corners)
a) Find the potential V(x,y,z) at all points in this pipe.
b) Sketch the E-field lines and equipotential contours inside the pipe. Also, state in words what the boundary condition on the bottom wall means. (What does it tell you? Is the bottom wall a conductor?)
c) Find the charge density σ(x=0,y,z) everywhere on the left conducting wall (x=0).

Q2. Exam review! (The rest of this homework is required, and you should turn it in. But, for obvious reasons, the grader will not look over what you write in detail, it will be graded simply "credit/no credit". **On our website, in the syllabus link, after our "Introduction" paragraph, there is a link to our course goals. Go there, read that page first!** Then -

a) Invent two plausible exam questions: 1) a fairly quick "concept-test" like question, and 2) a more computational "homework-like" question. Write them both down, including your own solutions. *(If the 2nd one takes <≈ 5 min, how could we have made it more interesting/richer/challenging? If it takes >≈ 20 min, how could we scaffold/hint/simplify to get at the interesting physics, without making it so tedious/grungy?)*

(b) Write brief (just a few words!) summaries of each, characterizing what content your problems cover (e.g, "Coulomb's law with continuous charge distributions", or "Gauss' law", or "The divergence theorem" or etc)
Also, which of the "course scale learning goals" do your problems address?
(list them by number, please) See
 http://www.colorado.edu/physics/phys3310/phys3310_sp13/course_goals.html

Optional – feel free to share your sample questions on Piazza. (You can use someone elses' post for the extra credit below – but *only* if you respond online too, so they get feedback!)

Extra credit: (worth one lettered part above)
Get together with at least one other person from class, and share your questions.
Do theirs, and discuss with them whether you think they got the level and coverage right.
(If you can't find someone in person, use our site at piazza.com to find someone - but don't wait till the last minute, get this arranged with plenty of time. And, I don't want everyone using the same question, find a question nobody else has responded to!) To turn in:

Write down the name(s) of the person you worked with. To show us that you really did this activity, paraphrase their two questions. You do NOT have to show us your solution, though, that's for you to talk about with them.