# Homework #2 — due Wednesday, January 31

Numbers refer to the problems in Griffiths

From Wednesday, January 24:

1. **Problem C**

   Two parallel conducting plates are separated by a distance d and are held at electric potentials V_1 and V_2, as shown in the diagram. Assume $V_2 > V_1$. The region between the plates is filled with two equal sized slabs of linear dielectric materials, with permeabilities ϵ_1 and ϵ_2.
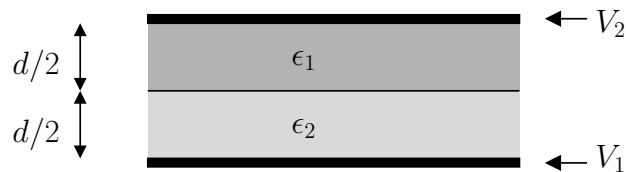
   (a) Assume that the boundary surface between the dielectrics has no free charge on it. Calculate the $\mathbf{D}$ and $\mathbf{E}$ fields in the region between the plates. Also calculate the bound charge density ρ_b in both dielectrics, and the surface bound charge σ_b at the interface between them.

   (b) Repeat part (a), but now with a free charge density σ_f on the interface between the dielectrics.

2. 6.17

From Friday, January 26:

3. 7.40

4. 7.63

From Monday, January 29:

5. 8.1

6. 8.2