

Physics 106C: Electromagnetism

Homework 3: Dielectric Media

DUE: Thursday, April 26 2001

Remember: Late homework will be granted 50% credit UNLESS PRIOR ARRANGEMENTS ARE MADE WITH ME OR A TA. If you have an extension, please indicate who granted it clearly on the top of the paper OR YOU WILL NOT GET FULL CREDIT. Note that for the rest of Phys106, you must solve integrals analytically, or by looking them up in a table, but you may not use Mathematica.

Reading Assignment: Jackson Chapter 4.3 – 4.7

1) A point charge is placed a distance d above the $x - y$ plane on the z -axis. Suppose the entire region below the $x - y$ plane is filled with a uniform linear dielectric material with susceptibility χ_e , and the region above is filled with a material of susceptibility χ'_e . Find the potential in all space.

Do Jackson problems 4.8, 4.9, 4.10, 4.13.