

Reading Assignments

See the handouts for each lesson for the reading assignment

Feb. 1 class - Lesson 2.4

Assignment due at start of class (2 points)

1. The electric field in a material with relative permittivity, $\epsilon_r = 4$ is $\mathbf{E} = 400 \mathbf{a}_x + 500 \mathbf{a}_z$ Volts/m. What is \mathbf{D} ?
2. On the air side of an air-dielectric boundary, the displacement flux, \mathbf{D} is tangential to the boundary and has a magnitude of $3 \times 10^{-6} \text{ C/m}^2$. What is the magnitude of \mathbf{D} on the dielectric side if the dielectric constant $\epsilon_r = 8$?

Feb. 3 class - Lesson 2.5

Assignment due at start of class (2 points)

1. A parallel plate capacitor has a plate area of 2 m^2 , a plate separation of $10 \mu\text{m}$ and the material between the plates is a dielectric with $\epsilon_r = 10$. What is its capacitance?
2. A $3 \mu\text{F}$ capacitor has 10 Volts between its plates. How much charge is on one of the plates?

Feb. 4 & 5 class - Lesson 2.6

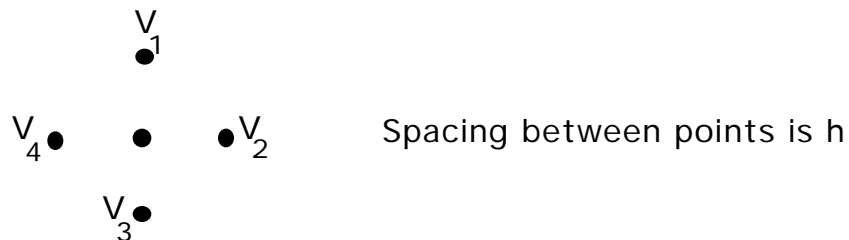
Assignment due at start of class (2 points)

1. The voltage in a region of free space (cylindrical coordinates) is given by $V = 3 \exp(-r/a)$. What is the charge density, ρ ?
2. If you can use Laplace's equation to solve for the voltage, what must the charge density, ρ equal?

Feb. 8 class - Lesson 2.6

Additional reading assignment from Connor and Salon's notes (V-27 -> V-33)

Assignment due at start of class (2 points)



1. The voltages in the picture above are $V_1 = 10 \text{ V}$, $V_2 = 20 \text{ V}$, $V_3 = 10 \text{ V}$, and $V_4 = -30 \text{ V}$. What is the approximate voltage at the center point?
2. What is the approximate value of $\nabla^2 V / x^2$ at the center point?
Use $h = 0.01 \text{ m}$.

Feb. 10 class

Open shop to work on Homework 3. Due at 6 PM.