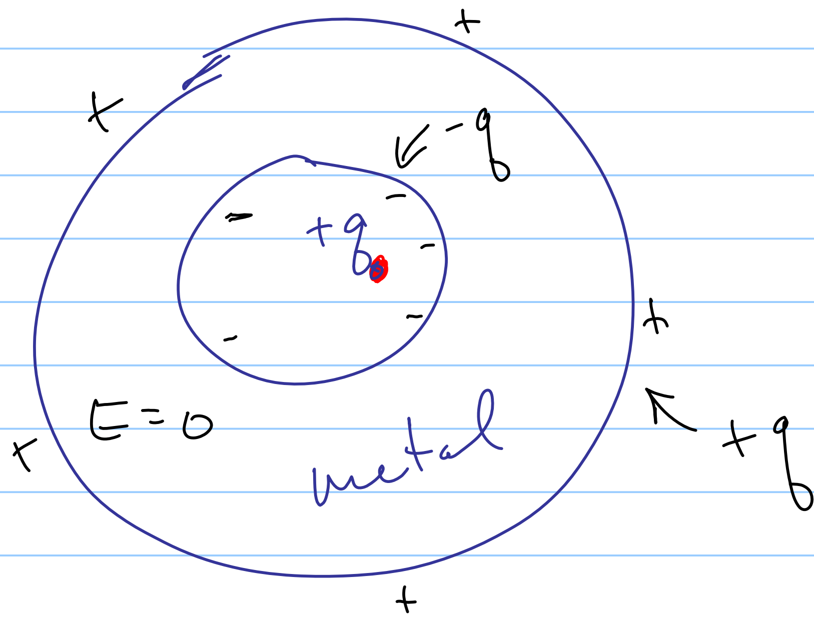
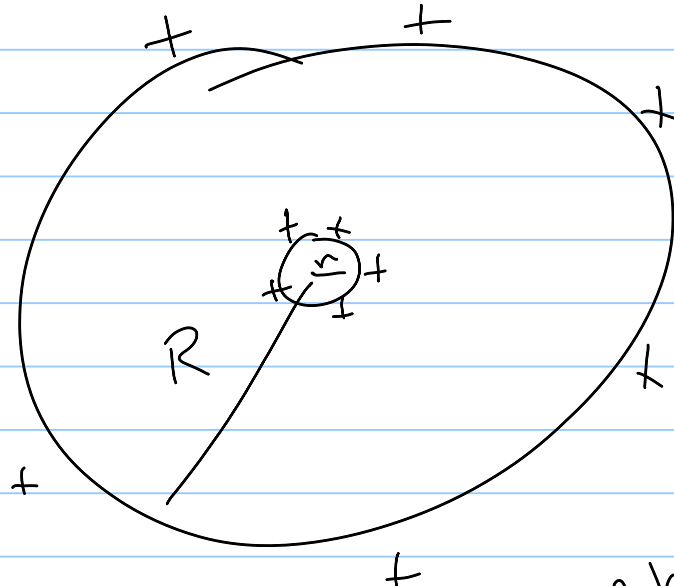
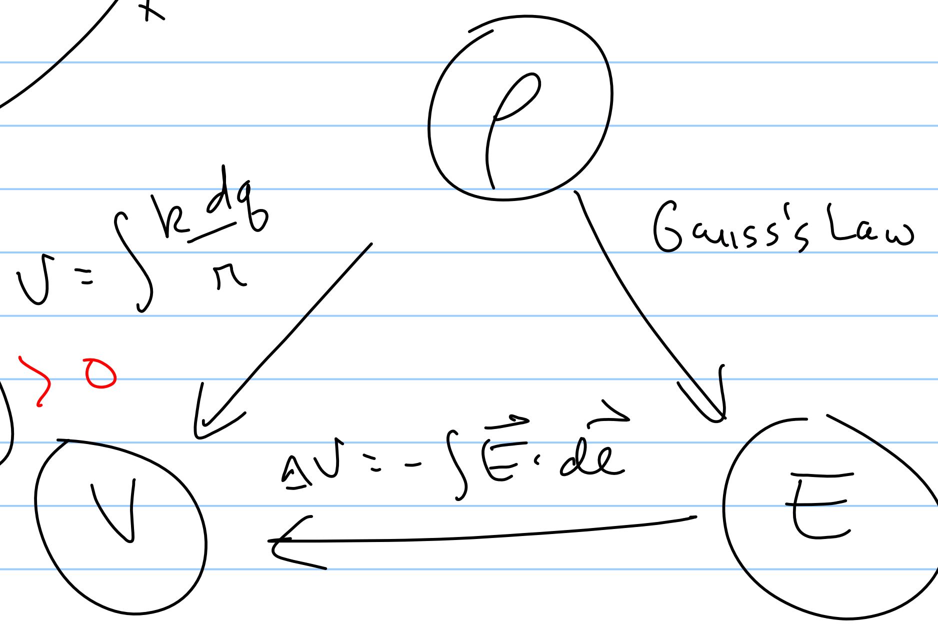
Lecture 10

Note Title 2/1/2006







$$-\int_R^{r} \frac{kq}{r^2}\,\hat{r}\cdot \underbrace{d\vec{\ell}}_{dr\,\hat{r}} = kq\left(\frac{1}{r}-\frac{1}{R}\right) > 0$$

$$\nabla^2 V = -\rho/\epsilon_0$$

$$\frac{\partial^2 V}{\partial x^2} + \frac{\partial^2 V}{\partial y^2} + \frac{\partial^2 V}{\partial z^2} = -\rho/\epsilon_0$$

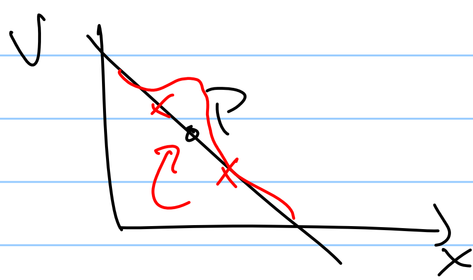
free space $\rho = 0$

$$\nabla^2 V = 0$$

Laplace's eqn

1-D

$$\frac{d^2 V}{dx^2} = 0 \qquad V = ax + b$$



2 bndy condition determine

a & b

- V at point is average value of V in neighborhood of V
- V can have no local maximum or minima except at bndy