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

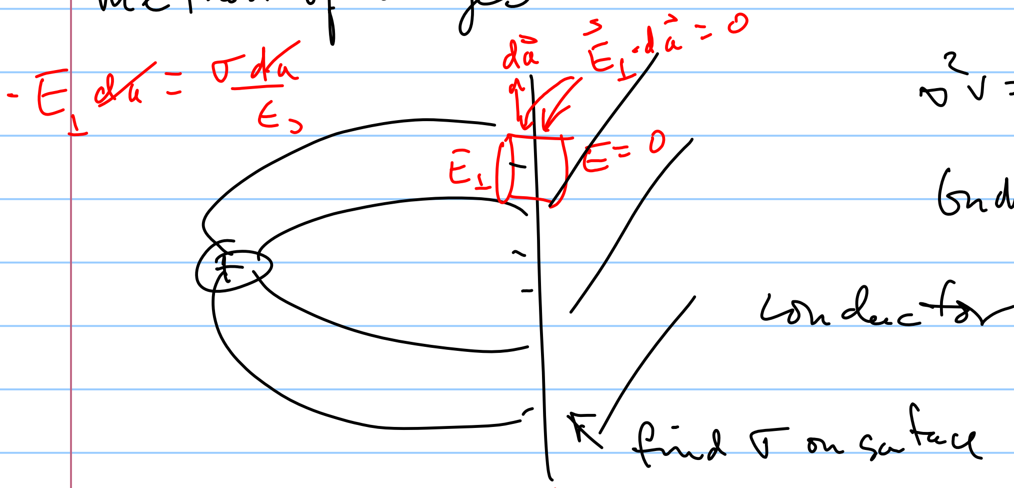
$\vec\nabla \cdot \vec E = \rho/\epsilon_0$

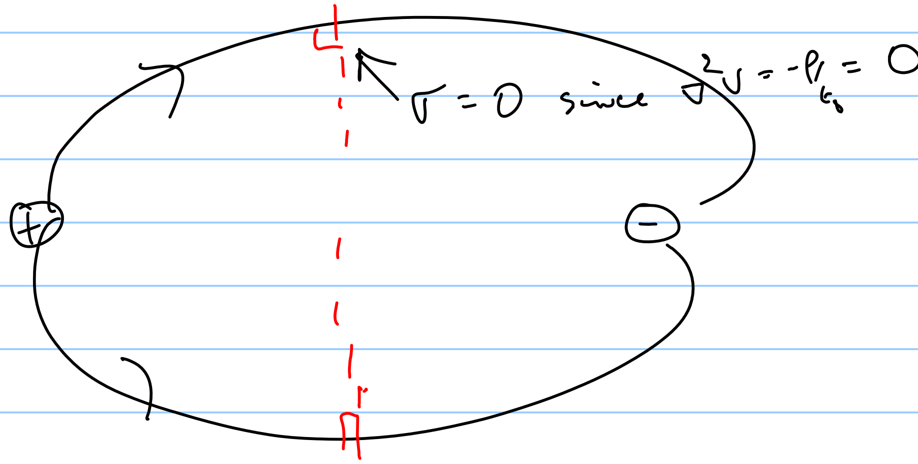
$\vec E = -\vec\nabla V$

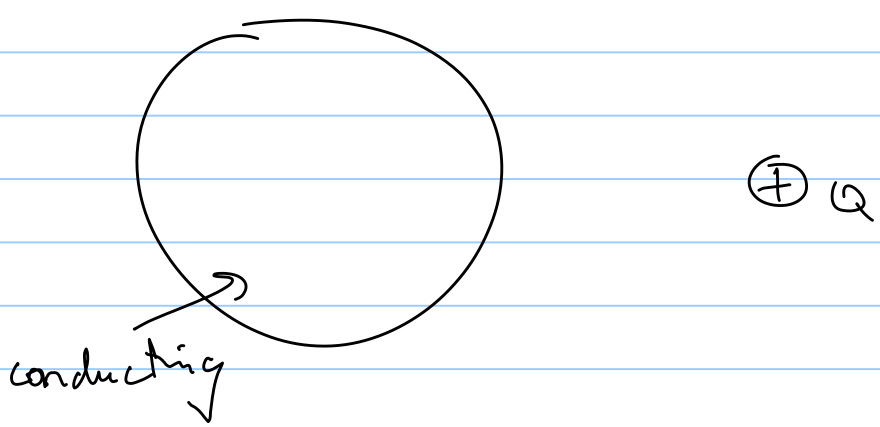
method of images

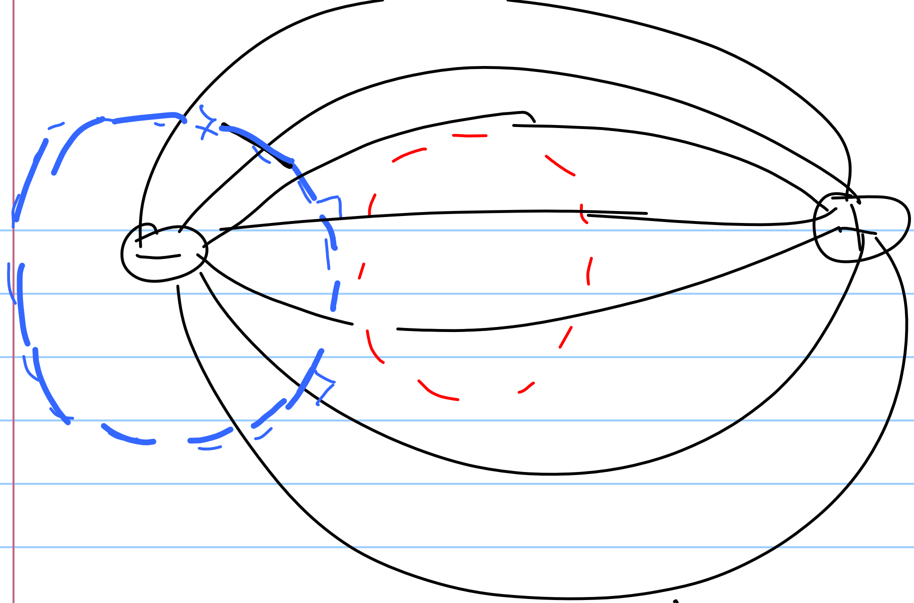
$\nabla^2 V = -\rho/\epsilon_0$

Bndry condition $\vec E_{\parallel} = 0$ at conducting surface

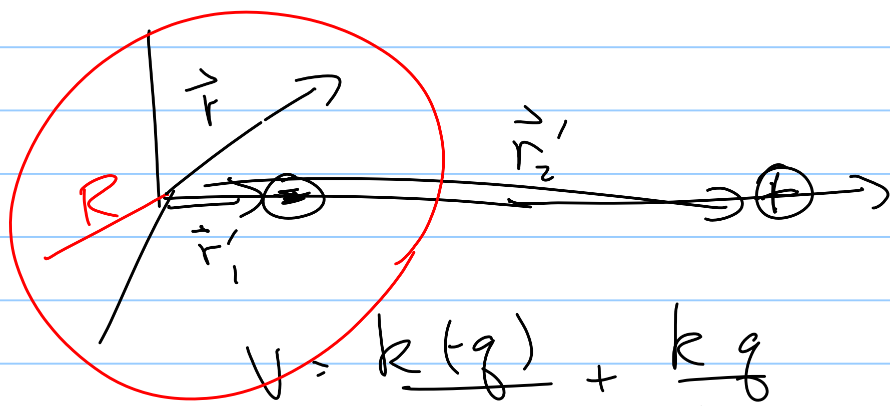








Conductor V is constant on surface of conductor



$\vec{r}_1 = \vec{r} - \vec{r}_1{}'$

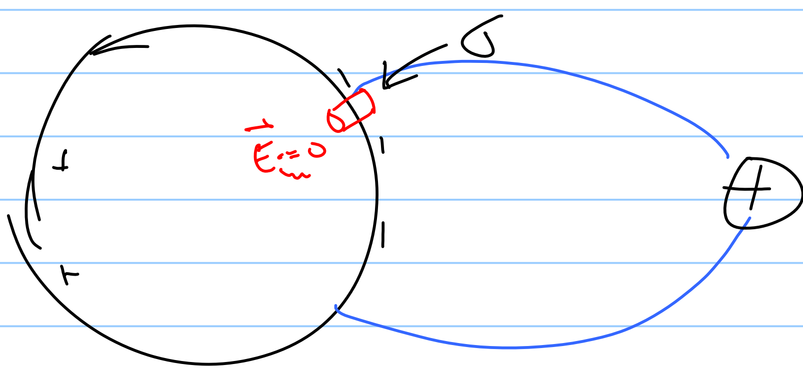
$\vec{r}_2 = \vec{r} - \vec{r}_2{}'$

$$V = \frac{k(-q)}{r_1} + \frac{kq}{r_2}$$

finding eqn $V(R) = \text{constant}$ 2 eqns

gives $V(x,y,z)$

$V_{surface}$

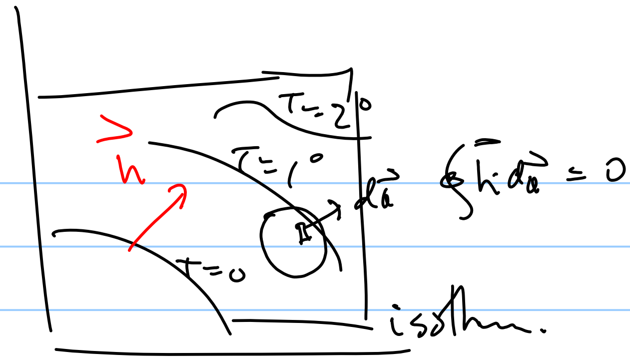


$$\oint E \cdot d\vec{a} = \frac{Q_{enc}}{\epsilon_0}$$

$$E\,da = \frac{\sigma\,da}{\epsilon_0}$$

material: $T(x,y,z)$
↑ scalar

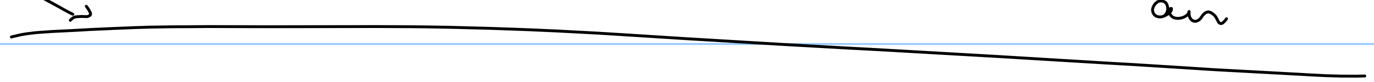
PDE for T



$\nabla^2 T$ = Source density ≈ ρ

$\vec{\nabla} T(x,y,z) = \vec{h}$ flow of thermal energy

border $h_\perp = 0$



$\nabla^2 T = 0$
except here — nuclear bomb

thermal statics