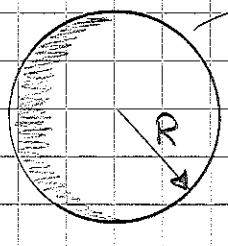
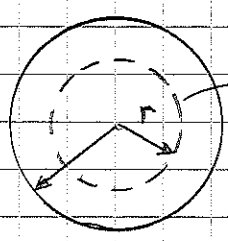


Q distributed uniformly on surface.

a.) for $r < R$:

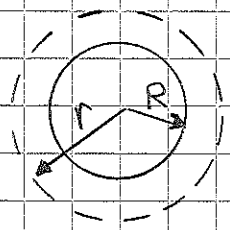


Gaussian surface

$$\Phi_E = \oint \vec{E} \cdot d\vec{A} = \frac{Q_{in}}{\varepsilon_0}$$

$$E 4\pi r^2 = 0 \quad \Rightarrow \quad \underline{E(r<R) = 0}$$

b.) For $r \geq R$:



Gaussian surface

$$\Phi_E = \oint \vec{E} \cdot d\vec{A} = \frac{Q_{in}}{\varepsilon_0}$$

$$E 4\pi r^2 = \frac{Q}{\varepsilon_0}$$

$$\underline{E(r \geq R) = \frac{1}{4\pi\varepsilon_0} \frac{Q}{r^2}}$$