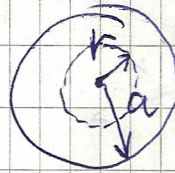


ELECTRIC FIELD DUE TO SPHERE OF RADIUS  $[a]$  AND UNIFORM (VOLUME) CHARGE DENSITY  $[P]$  WITH TOTAL POSITIVE CHARGE  $[Q]$

1. INSIDE THE SPHERE

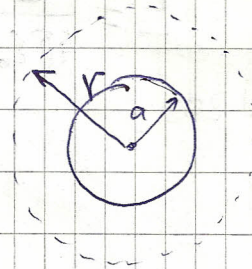


$$\Phi = \int E dA = \frac{q}{\epsilon_0} \quad ; \quad q = P V \quad ; \quad P = \frac{Q}{\frac{4}{3}\pi a^3}$$

$$E \int dA = \frac{q}{\epsilon_0}$$

$$E = \frac{P \frac{4}{3}\pi r^3}{4\pi r^2 \epsilon_0} = \frac{P}{3\epsilon_0} r$$

2. OUTSIDE THE SPHERE



$$E = k \frac{Q}{r^2}$$

NOTE THE GRAPH BELOW

