Problem.

A spherically symmetric but variable charge density of the form

\[ \rho(r) = \begin{cases} 
\frac{A}{r^2} & , \quad r < R \\
0 & , \quad r > R 
\end{cases} \]

is present inside a sphere of radius \( R \). Find the electric field (magnitude and direction):
(a) Inside the sphere, \( r < R \).
(b) Outside the sphere, \( r > R \).