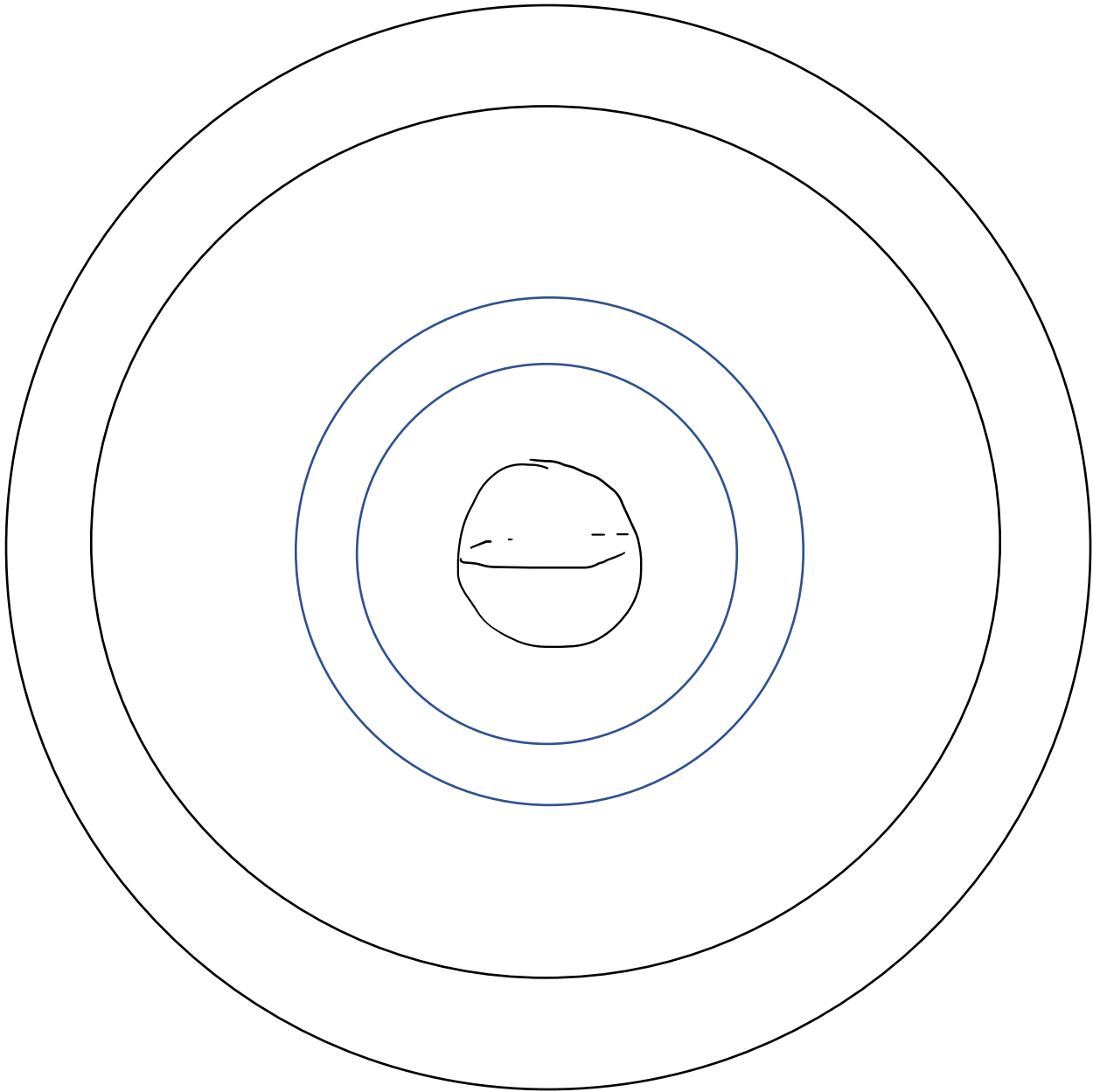


Gauss's Law and Spherical Charge Densities

1. Suppose that there exists the following system of spheres and shells, where the inner sphere is non-conducting and has a uniformly distributed net charge of $+Q$, the blue shell is conducting and has a net charge of $-Q$, and the black outer-most shell has a net charge of $+Q$. Draw the charge distribution on the system below.



2. The sphere below has a radius of R and a charge of Q , is non-conducting, and has a volumetric charge distribution according to the following function:

$$\rho = c r; \{r < R, c > 0\}$$

where c is a constant, and r is the radial distance from the center of the sphere.

Using Gauss's Law, find the electric field for points inside of the sphere as a function of r .

