A solid sphere of radius 9 m contains a concentric spherical hole of radius 2 m. The solid part of the sphere carries a uniform volume charge density $\rho = \frac{3}{7\pi} \frac{C}{m^3}$. We are interested in finding the Electric field at $r = 4$ m from the center of the sphere using Gauss' law $\oint E \cdot dA = \frac{q_{\text{enclosed}}}{\varepsilon_0}$.

a. Draw the appropriate Gaussian surface and draw E and dA on the picture.

b. What is $q_{\text{enclosed}}$ at $r = 4$ m?

c. What is $\oint E \cdot dA$?

d. What is E at $r = 4$ m. (leave your answer in terms of $K = \frac{1}{4\pi \varepsilon_0}$ treated as a number without units.)