Ground rules:
• Open book
• Closed notes
• You may consult one page of handwritten notes
• Write your answer directly on this sheet (continue onto back, if necessary)

Question:
A sphere of radius $R$ contains a positive uniform interior charge density $\rho_0$, and the surface is covered with a uniform negative surface charge density that is precisely chosen to make the entire sphere net neutral, so that the total charge on the sphere is zero. By spherical symmetry the electric field is radial, $E(\mathbf{r}) = E(r) \hat{r}$. Using Gauss’s law, find $E(r)$ both inside and outside the sphere.