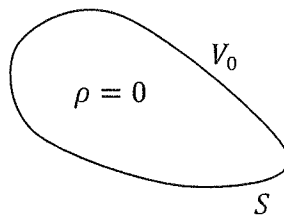
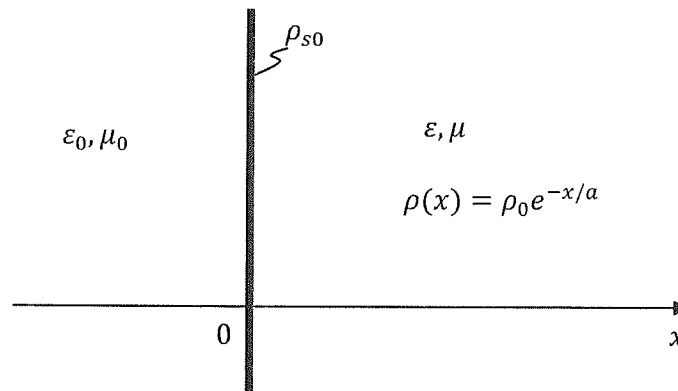


1. (50 pts.) Consider a volume enclosed by a closed surface S as shown in the figure. There are no charges in the volume ($\rho = 0$). If the potential on the surface S is constant $V = V_0$, please calculate (a) the potential and (b) electric field intensity in the volume. This is a statics problem.



2. (50 pts.) The region $x > 0$ is characterized by constant permittivity ϵ and permeability μ . It also has a volume charge density $\rho(x) = \rho_0 e^{-x/a}$ where a is a positive constant. A constant surface charge density ρ_{s0} also exists on the plane $x = 0$. The space $x < 0$ is characterized by $\epsilon = \epsilon_0$, $\mu = \mu_0$ and $\vec{E}(x < 0) = 0$. Please calculate the electric field intensity \vec{E} and polarization \vec{P} in the region $x > 0$. This is a statics problem.



Write in Exam Book Only