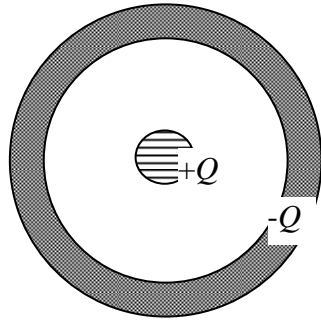


Due on Wed., Oct 14

1. A point charge $+Q$ is located at the center of a metal spherical shell, which carries charge of $-Q$, as shown in the figure. Assume the size of point charge and the thickness of the shell are negligible, and the radius of the shell is R .



- (a) Sketch the electric field between the point charge and the shell.
 - (b) Sketch the electric field outside the shell.
 - (c) Find the electric field at a distance r away from the center.
- (Hint: you may need Gauss's law in part c and discuss $0 < r < R$, $r > R$ separately.)