

Special Problem 5-3.3

An **electric flux density** described as:

$$\mathbf{D}(\bar{r}) = \frac{\rho \hat{a}_\rho + z \hat{a}_z}{12} \quad \left[\frac{C}{m^2} \right]$$

exists in all space.

Determine then the (free) **charge enclosed** in a cylinder of radius 2 m and length 6 m. This cylinder is centered at the origin and aligned with the z-axis.

Recall the surface of cylinder has **three** areas (top, bottom and side).

