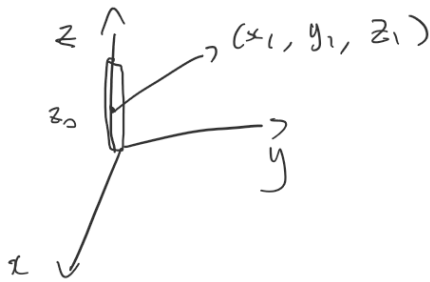## Problem 0.1

a)

$$m = \rho V = \rho \pi R^2 L$$

b)

$$\Delta m = \rho \Delta V = \rho \pi R^2 \Delta z$$

c)

$$\vec{r} = x_1 \hat{i} + y_1 \hat{j} + (z_1 - z_0)\hat{k}$$

d)

$$\hat{L} = \sin\theta \hat{i} + 0\hat{j} + \cos\theta \hat{k}$$