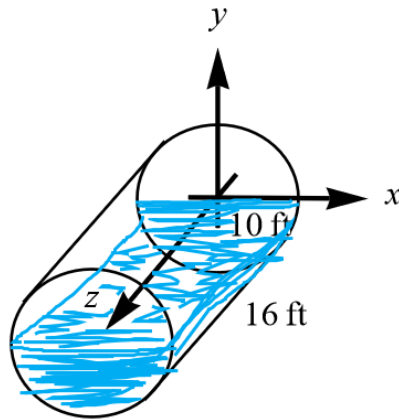


## Exercise 18

A tank in the shape of a right-circular cylinder of radius 10 ft and height 16 ft is half filled and lying on its side. Describe the air space inside the tank by suitably chosen cylindrical coordinates.

### Solution

Below is an illustration of the half-filled tank.



The air space is described in cylindrical coordinates by

$$0 \leq r \leq 10$$

$$0 \leq \theta \leq \pi$$

$$0 \leq z \leq 16.$$