## Exercise 6

Sketch the following solids:
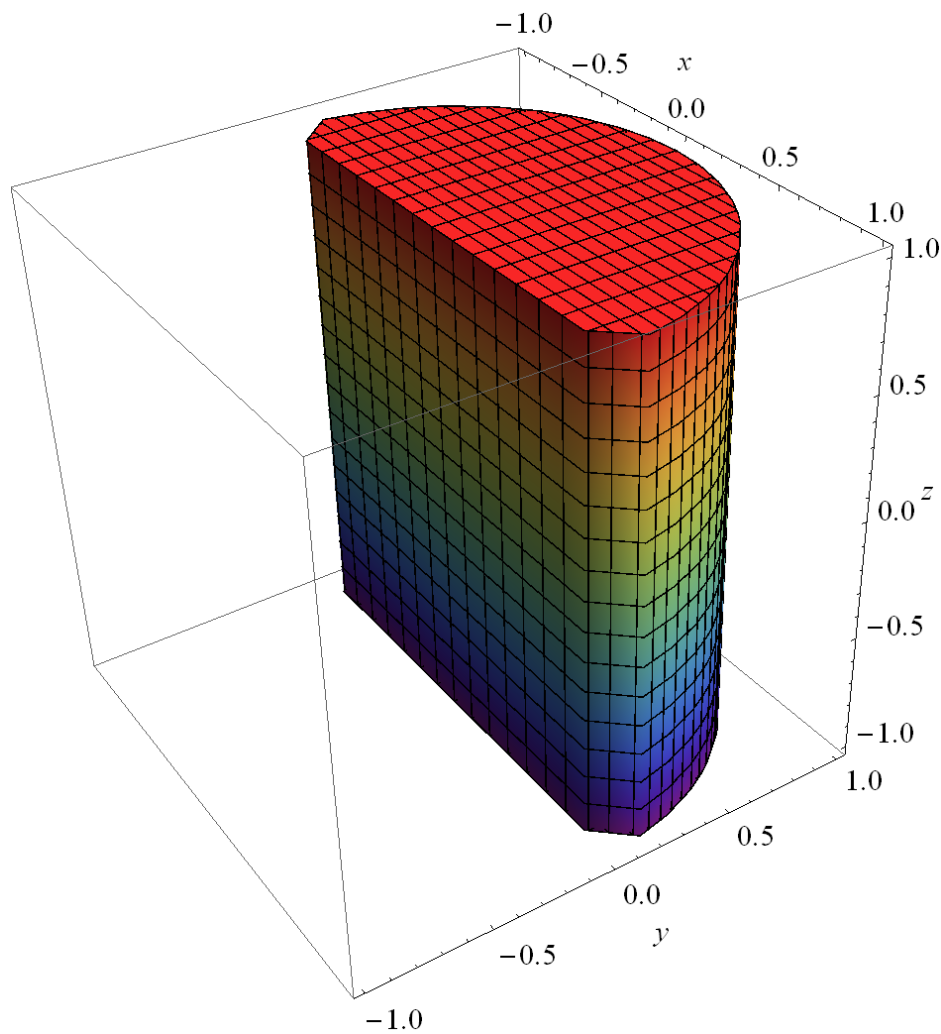
(a) $r \in [0,1]$, $\theta \in [0,\pi]$, $z \in [-1,1]$

(b) $r \in [0,2]$, $\theta \in [0,\pi/2]$, $z \in [0,4]$

(c) $\rho \in [0,1]$, $\theta \in [0,2\pi]$, $\phi \in [0,\pi/4]$

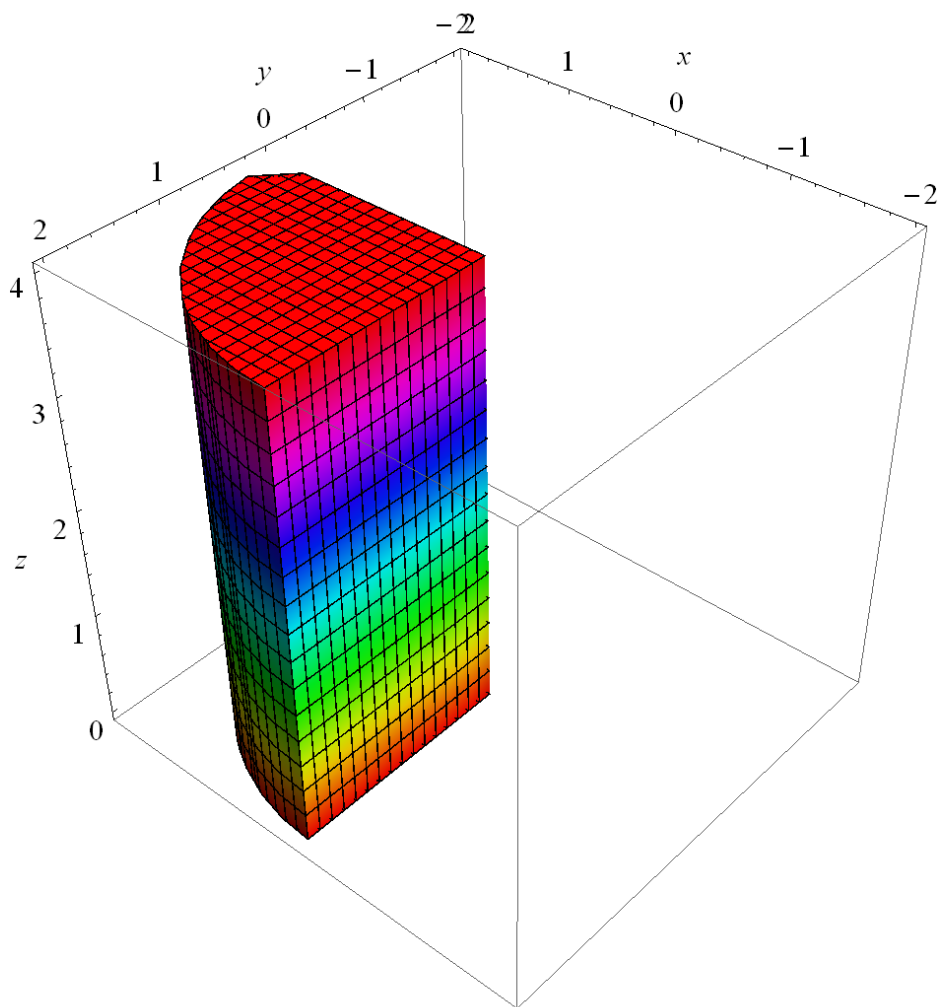(d) $\rho \in [1,2]$, $\theta \in [0,2\pi]$, $\phi \in [0,\pi/2]$

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**Solution**

**Part (a)**

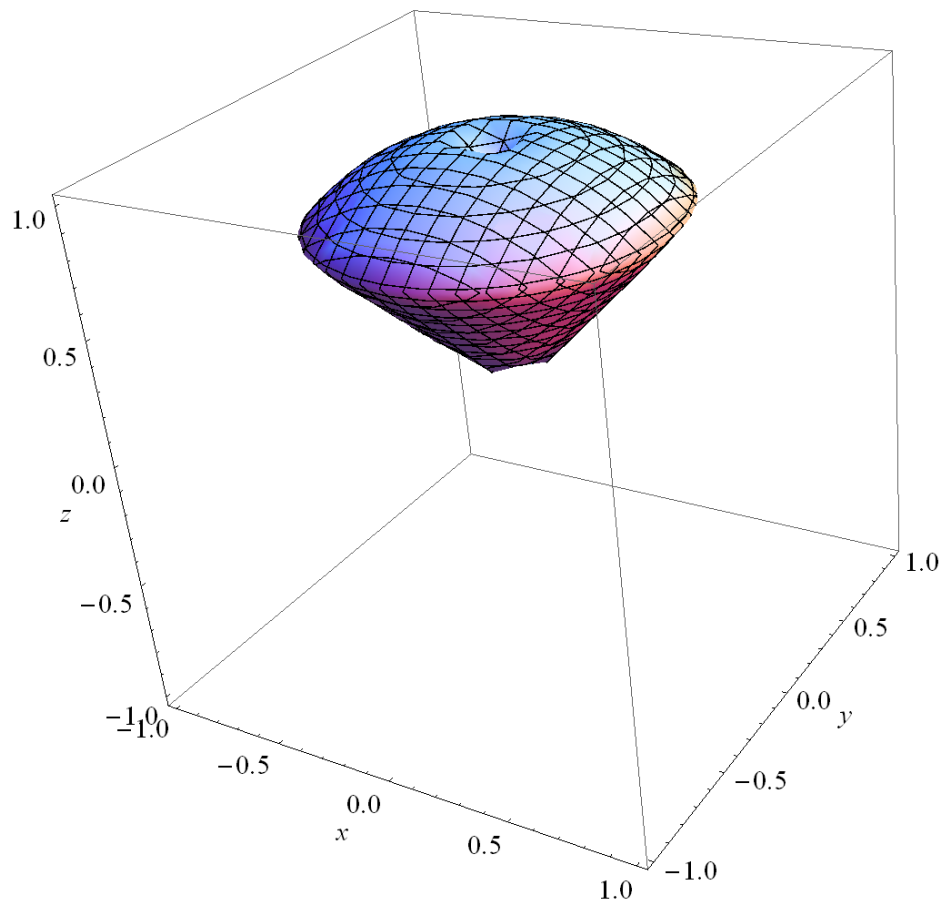$r \in [0,1]$, $\theta \in [0,\pi]$, $z \in [-1,1]$ is half of a cylinder.

## Part (b)

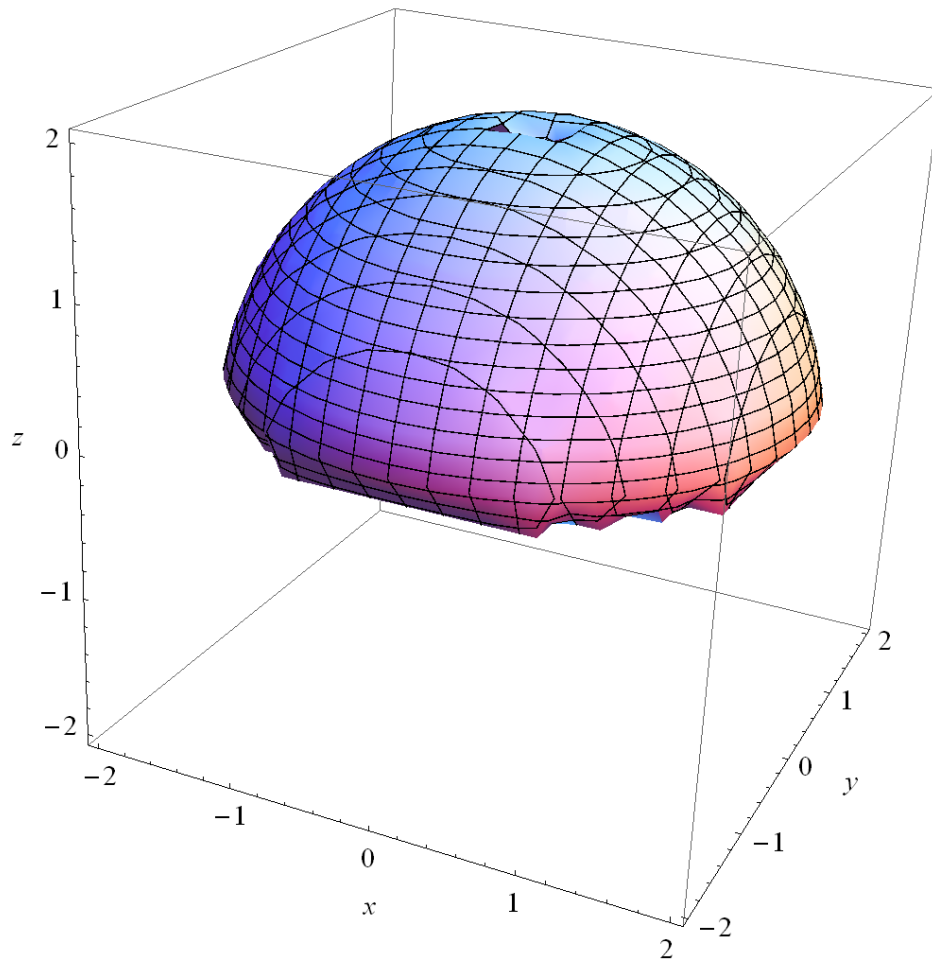$r \in [0, 2]$, $\theta \in [0, \pi/2]$, $z \in [0, 4]$ is a quarter-cylinder.

## Part (c)

$\rho \in [0, 1]$, $\theta \in [0, 2\pi]$, $\phi \in [0, \pi/4]$ is an ice cream cone, diamond, or UFO.

## Part (d)

$\rho \in [1, 2]$, $\theta \in [0, 2\pi]$, $\phi \in [0, \pi/2]$ is a thick bowl. This first figure is a view of the dorsal side.

This second figure is a view of the ventral side.