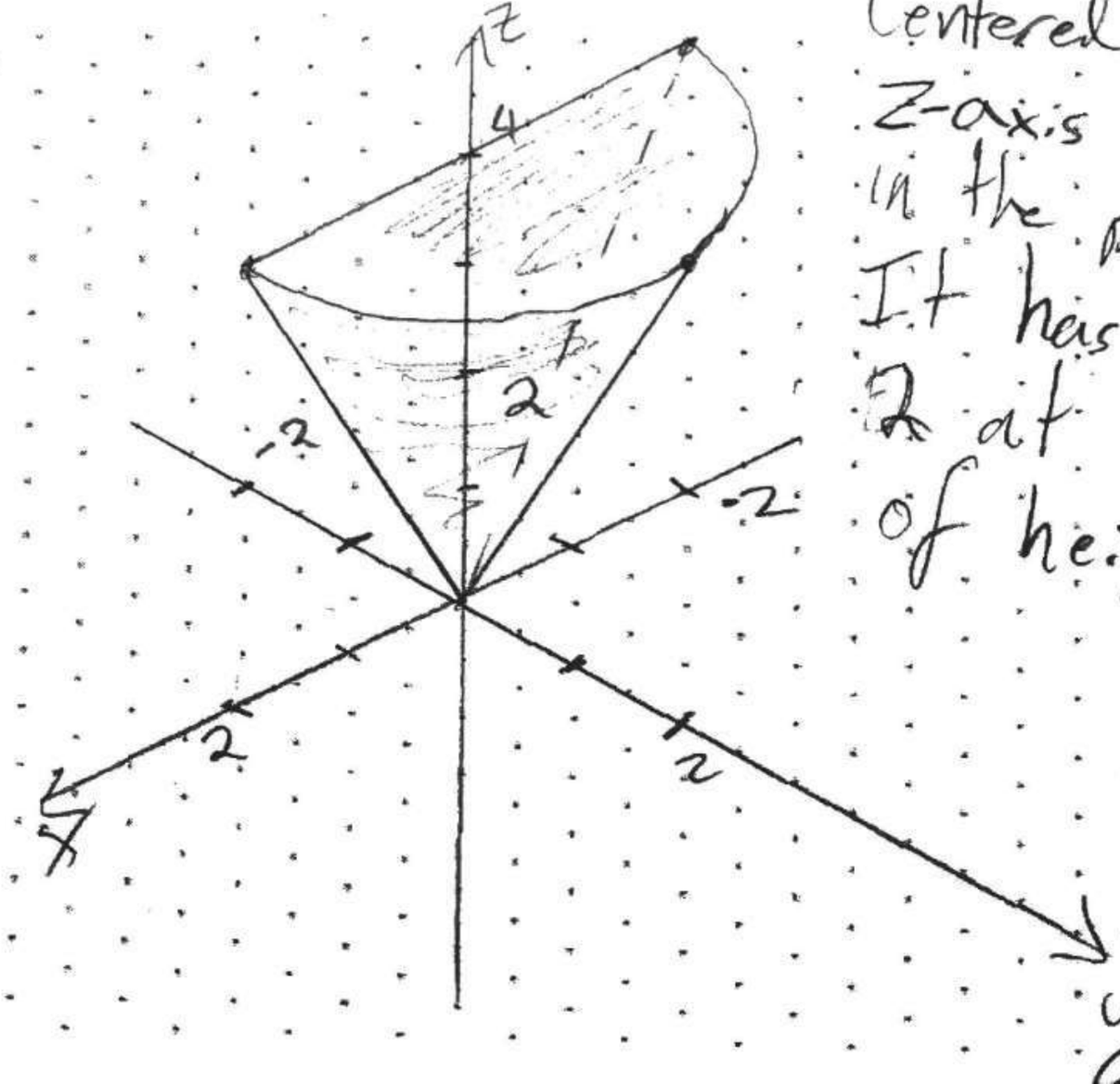
(4) Graph and describe the shape indicated by the integral:

$$\int_0^{\pi}\int_0^{2}\int_{2r}^{4} r\,dz\,dr\,d\theta$$

$0 \le \theta \le \pi$

$0 \le r \le 2$

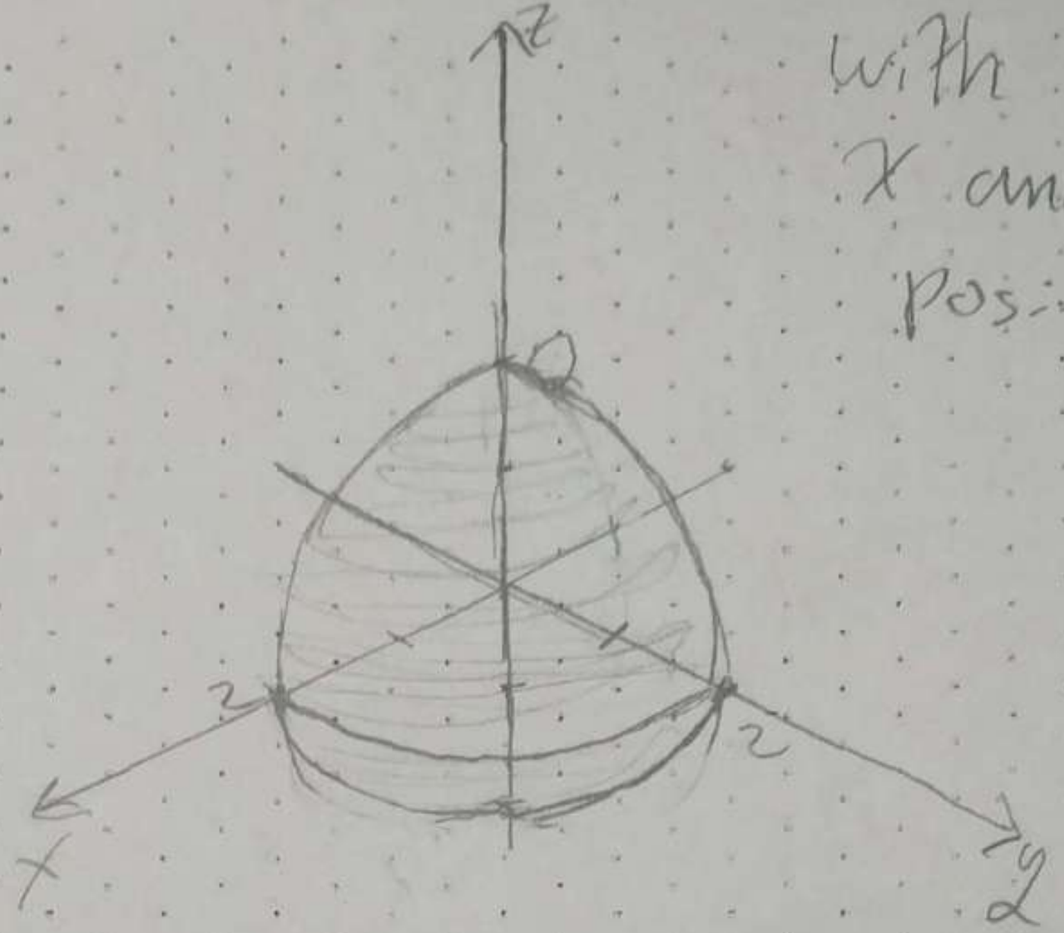
$2r \le z \le 4$



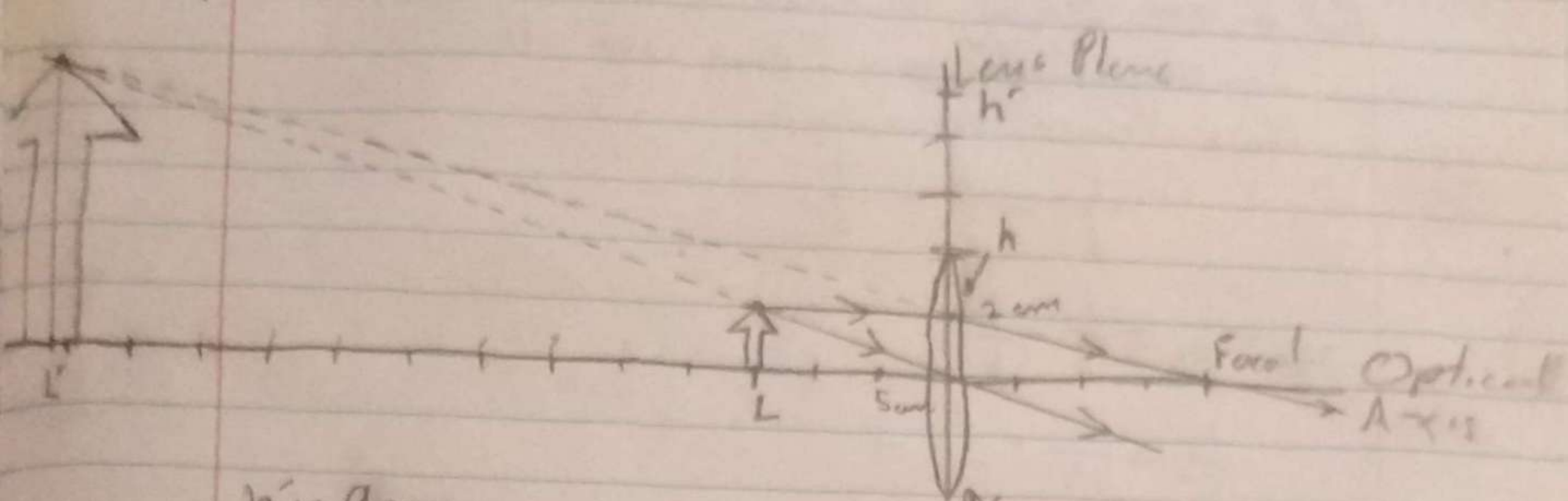
A solid half circular cone, centered around the z-axis and opening in the positive z-direction. It has a radius of 2 at the flat top of height 4.

(c) Graph and describe the given shape.

$$0 \le \rho \le 2 \quad 0 \le \theta \le \frac{\pi}{2} \quad 0 \le \phi \le \pi$$

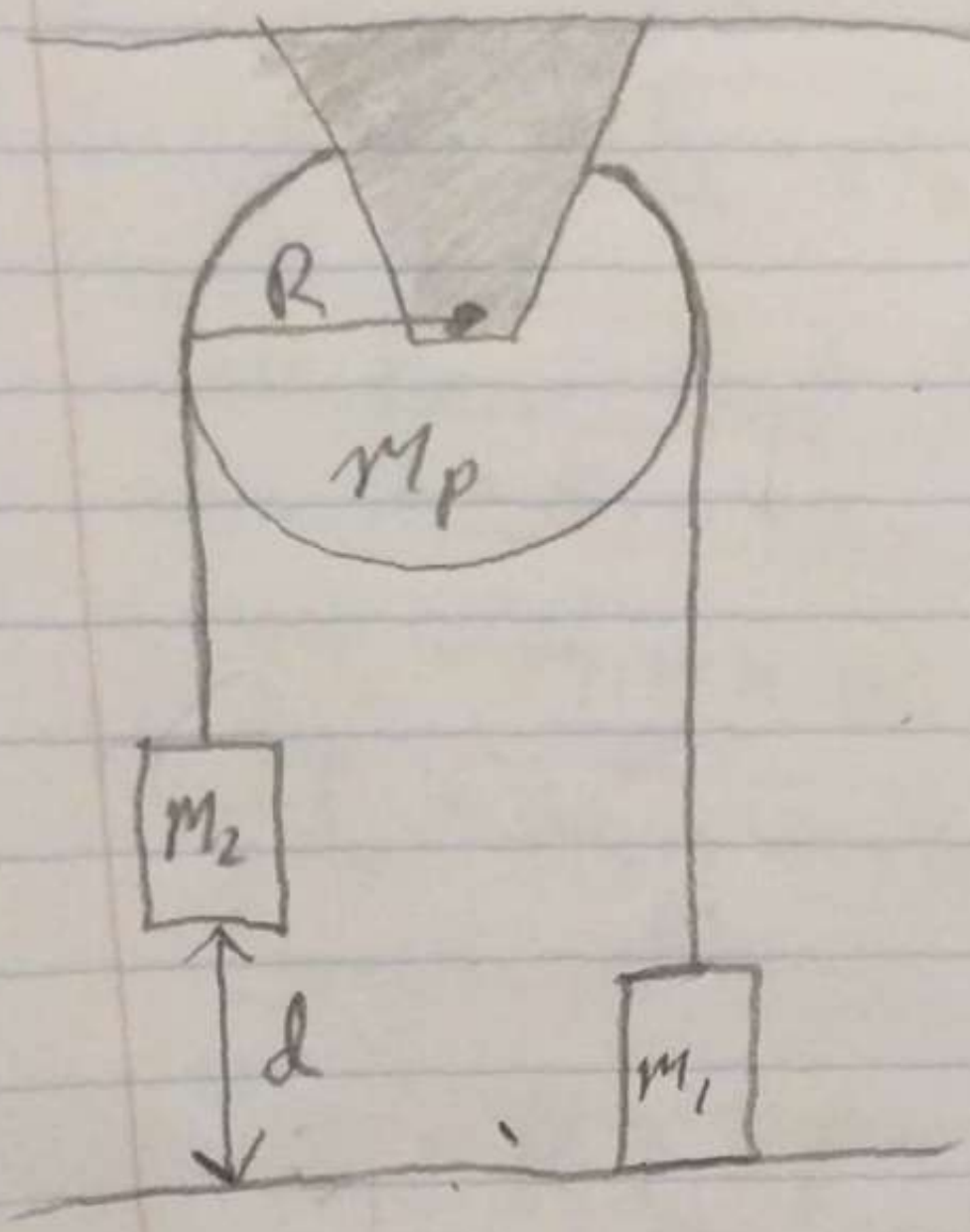


A quarter of a sphere centered at the origin with radius 2. The x and y values are positive.

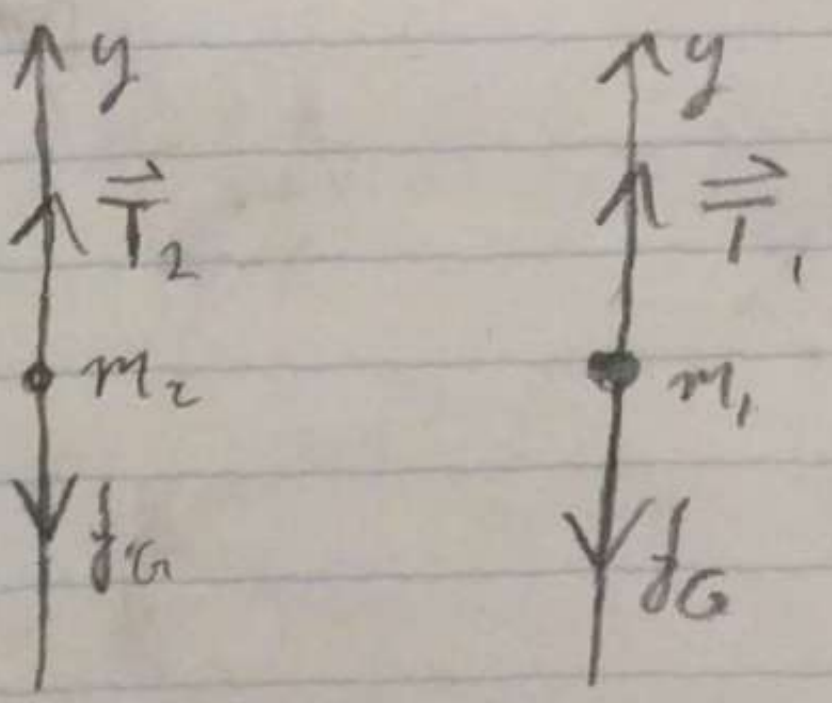


$h' \simeq 9\text{cm}$

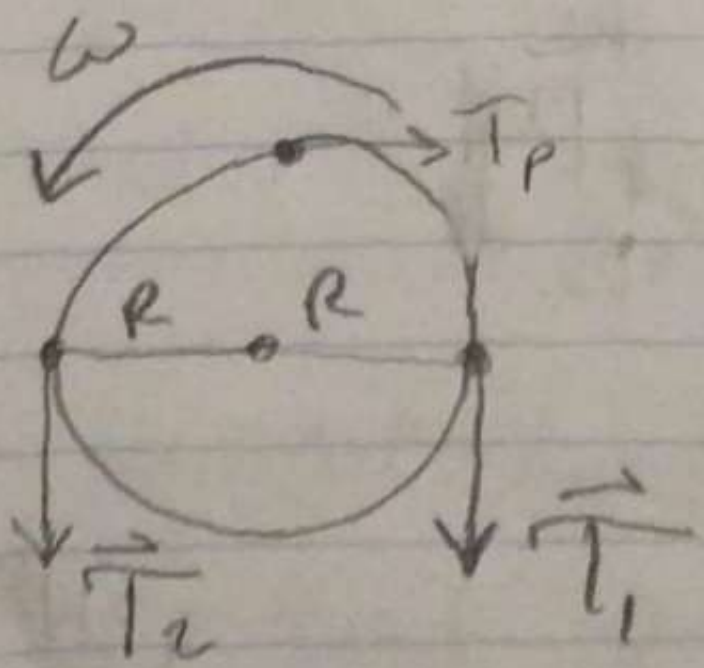
$L' \simeq 66\text{cm}$


R
m_p
m_2
d
m_1

a)


y
$\vec{T}_2$
m_2
$\vec{F}_G$
y
$\vec{T}_1$
m_1
$\vec{F}_G$

b)


ω
$\vec{T}_P$
R
R
$\vec{T}_2$
$\vec{T}_1$