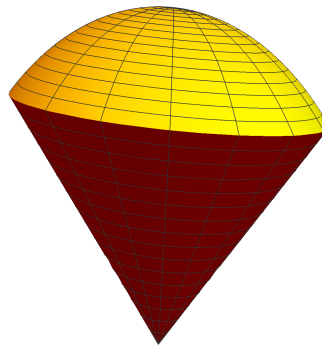


## Lecture 24: Spherical integration

- 1 Find the volume of  $\int \int \int_E 1 \, dx dy dz$  of the solid  $E$  obtained by intersecting the sphere  $x^2 + y^2 + z^2 \leq 4$  with the one sided cone  $x^2 + y^2 \leq z^2, z \geq 0$ .



- 2 Write down the integral for the moment of inertia  $\int \int \int_E x^2 + y^2 \, dx dy dz$  of this solid  $E$ .
- 3 Set up the integral for  $\int \int \int_E z^2 \, dx dy dz$  for the solid which is the intersection of  $x^2 + y^2 + z^2 \leq 4$  and  $x^2 + y^2 \geq z^2$  and  $x > 0$ .