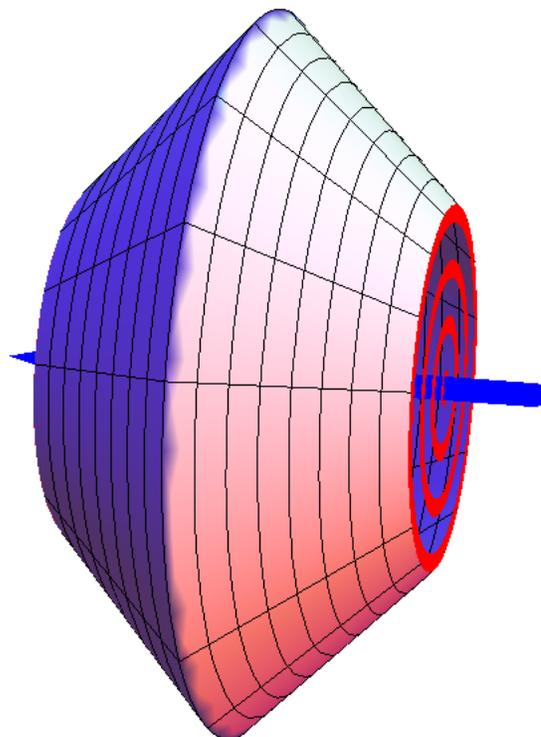


## Lecture 22: Worksheet

### Volume Computation

- 1 Find the volume of the solid that is formed by rotating the graph of  $y = 3x^2$  around the  $x$ -axis, for  $1 \leq x \leq 2$ .
- 2 Find the volume of the solid that is formed by rotating the graph of  $y = x^2$  around the  $y$ -axis, for  $1 \leq y \leq 3$ .
- 3 Derive the formula for the volume of a sphere ( $\frac{4}{3}\pi r^3$ ).
- 4 Find the volume of the solid of revolution for which the radius at height  $z$  is  $2 - |z|$  and  $-1 \leq z \leq 1$ .



5

The solid of revolution for which the radius at position  $x$  is  $x^4 + 1$  and  $x \in [-2, 2]$  is taken only above the  $xy$  plane as in the picture. Find the volume.

