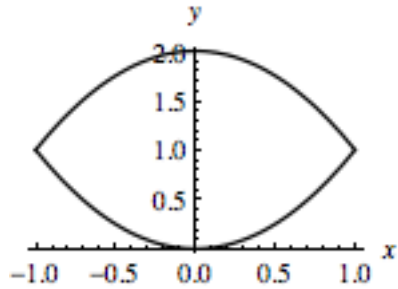


Double and Triple Integral Practice

1. Find the volume of the solid region bounded by $y=0$, $y=3$, $z=x^2$, and $z=2-x^2$.

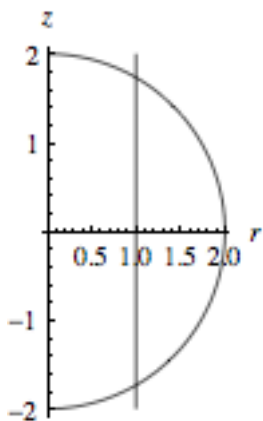


2. Use polar or cylindrical coordinates to find the volume of the solid inside the sphere $x^2 + y^2 + z^2 = 9$ and above the cone $z = \sqrt{x^2 + y^2}$.

3. Use spherical coordinates to find the volume of the solid inside the sphere $x^2 + y^2 + z^2 = 9$ and above the cone $z = \sqrt{x^2 + y^2}$.

4. Find the average value of $f(\rho, \phi, \theta) = \rho$ over the ball $\rho \leq 1$.

5. A 1-inch radius cylindrical hole is drilled through the center of a ball with 2-inch radius. Find the volume of the core that was removed from the ball.



6. Find the area inside the circle $x^2 + (y-2)^2 = 4$ that is outside the circle $x^2 + y^2 = 8$. Hint:

$$\sin^2 \theta = \frac{1}{2} - \frac{1}{2} \cos 2\theta.$$

