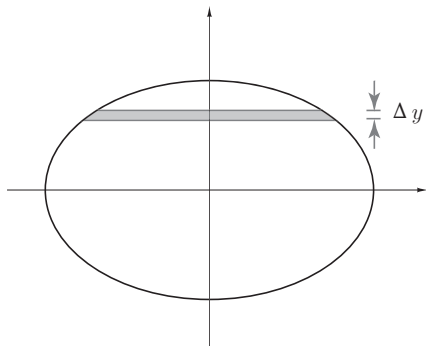
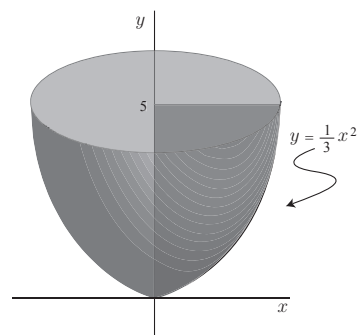


Show all relevant work!

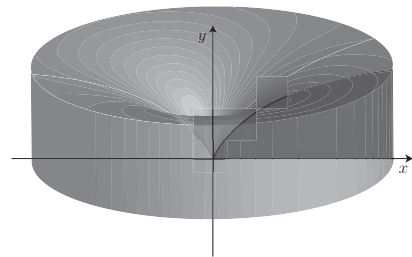
1. Use calculus to find the area of an ellipse with the formula $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$.



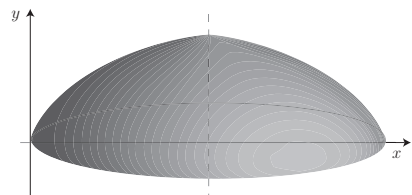
2. Find the volume of the solid generated by revolving the area bounded by $y = \frac{1}{3}x^2$ between $y = 0$, $y = 5$, and the y -axis about the y -axis.



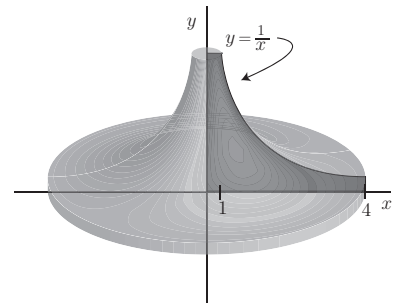
3. Find the volume of the solid generated by revolving the area bounded by $y = \sqrt{x}$ between $x = 0$, $x = 4$, and the x -axis about the y -axis.



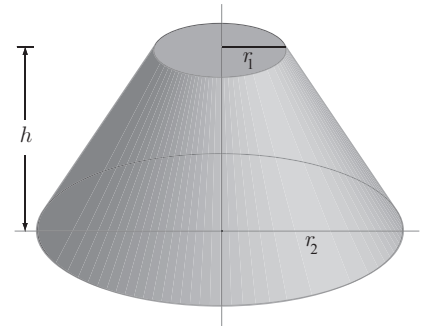
4. Repeat #3 for the volume of the solid generated by revolving the area bounded by $y = \sqrt{x}$ between $x = 0$, $x = 4$, and the x -axis about the axis $x = 4$.



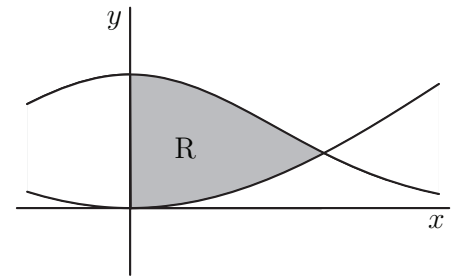
5. Find the volume of the solid shown to the right.



6. Derive the formula for the volume of a frustum where the base radii are r_1 and r_2 and the height is h .



7. The region R bounded by $f(x) = e^{-x^2}$ and $g(x) = 1 - \cos x$ is shown. Write the integral for the volume of the solid generated by revolving R about the x -axis.



8. An icecream cone has radius 2.5 cm at the top. If a scoop of icecream in the form of a sphere with radius 4cm is placed on top of the cone, what percentage of the icecream is outside the cone?

