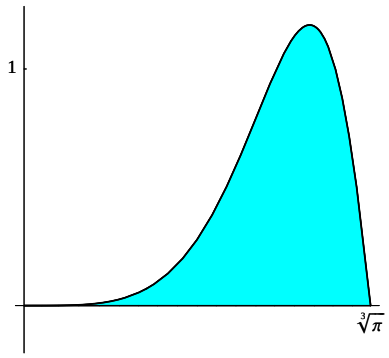
More on Volumes

1. This is the curve $y = x \sin x^3$. If we rotate this region about the y-axis, what is the volume of the resulting solid? (Once you get an integral, try to evaluate it.)



2. How can you describe a bagel as a solid of revolution? (That is, what sort of region would you rotate, and what line would you rotate it about?)

3. The disk of radius 3 centered at the origin is rotated about the line $x = 4$. Find the volume using vertical slices. (It is also possible to do it using horizontal slices, and you might want to try that for extra practice.)

4. Let $\mathcal{R}$ be the region enclosed by the x-axis, the y-axis, $y = 1$, and $y = \frac{1}{x} - 1$.

   (a) Find the volume generated when $\mathcal{R}$ is rotated about the line $x = -2$.

   (b) Find the volume generated when $\mathcal{R}$ is rotated about the line $y = 2$.