

Volume Project

2010volumeproject.doc

Adapted from Dixie Ross's Houston ACT Presentation

Directions:

1. Sketch each region
2. Set up and solve the integral to find the volume of each solid formed for each of the six problems
3. Identify a real-life object that resembles the solid formed
[Hint: Think candy!]
4. If you want, you may attach images of the objects for the six problems

This project is optional.

Volumes of Solids of Revolution

1. Rotate the region enclosed by $y = (\sin x)^{\frac{1}{2}}$ on the interval $0 \leq x \leq \pi$ about the x -axis. Determine the volume of the solid formed.
2. Rotate the region enclosed by $y = x^2$, $y = 0$, and $x = 2$ about the x -axis. Determine the volume of the solid formed.
3. Consider the region enclosed by $y = \frac{1}{2}x - 1$, $y = 0$, $y = 2$, and $x = 0$. Find the volume of the solid formed by revolving this region around the y -axis.
4. Consider the region in the first quadrant enclosed by $y = 4 - x^2$. Find the volume of the solid formed by revolving this region about the x -axis.
5. Consider the region described in problem 4. Find the volume of the solid formed by revolving this region about the y -axis.
6. Consider the region enclosed by $y = x^2$, $y = 0$, and $x = 3$. Find the volume of the solid formed by revolving this region around the line $x = 3$.