

VOLUME BY SHELLS

LESSON 5.3

EXAMPLE

Reconsider a problem we have already done:

Consider the region R bounded by $y = \sqrt{x}$, $y = 0$, and $x = 4$. **Sketch this region carefully (you will need it for the rest of the problem).** Then **set up** integrals that calculate the volume of the solid generated by revolving R about the axes indicated below:

(b) y – axis

(d) the line $x = 6$

Try setting up the volumes using the Disk Method (we did this already) and then retry using the Shell Method. Discuss similarities/differences/observations.

EXAMPLE

Consider the region R bounded by the curves $y = x^3 + x + 1$, $y = 1$, and $x = 1$. Set up the integral that gives the volume of the solid formed by revolving R about the line $x = 2$. Make sure you sketch the region R before you begin.

Try discs first and then try shells.