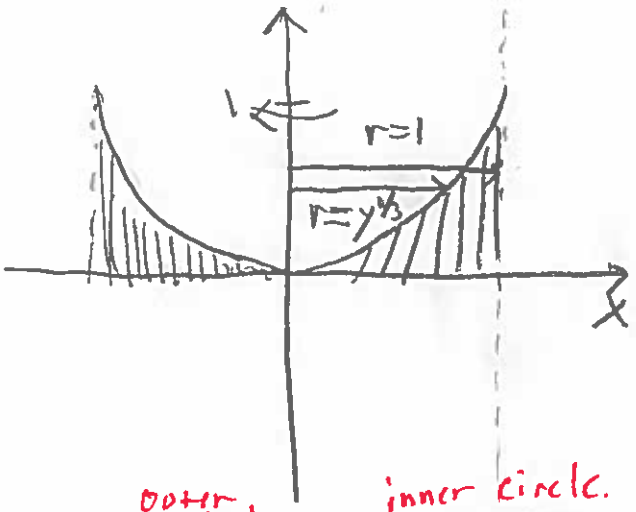
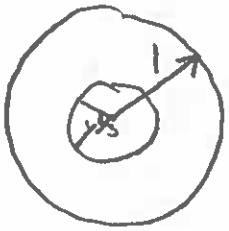
Math 112
Quiz #2

1. Consider the region bounded by the curves $y = x^3$, $x = 1$, $x = 0$ and $y = 0$. Find the volume of the solid resulting from revolving this region about the y-axis.



Cross section at coordinate y:



outer circle

inner circle.

$x=1$

$$V = \pi - \int_0^1 \pi y^{2/3}\,dy$$

$$= \pi - \pi y^{5/3}\cdot\frac{3}{5}\Big|_0^1 = \pi\left(1-\frac{3}{5}\right) = \frac{2\pi}{5}.$$

7 points correct integral.
- 1 points correct bounds
- 2 points for inverting radius (e.g. $x = y^{1/3}$)
- 2 points inner circle area
- 1 point outer circle area.

3 points for integral
- 2 points for small mistake.