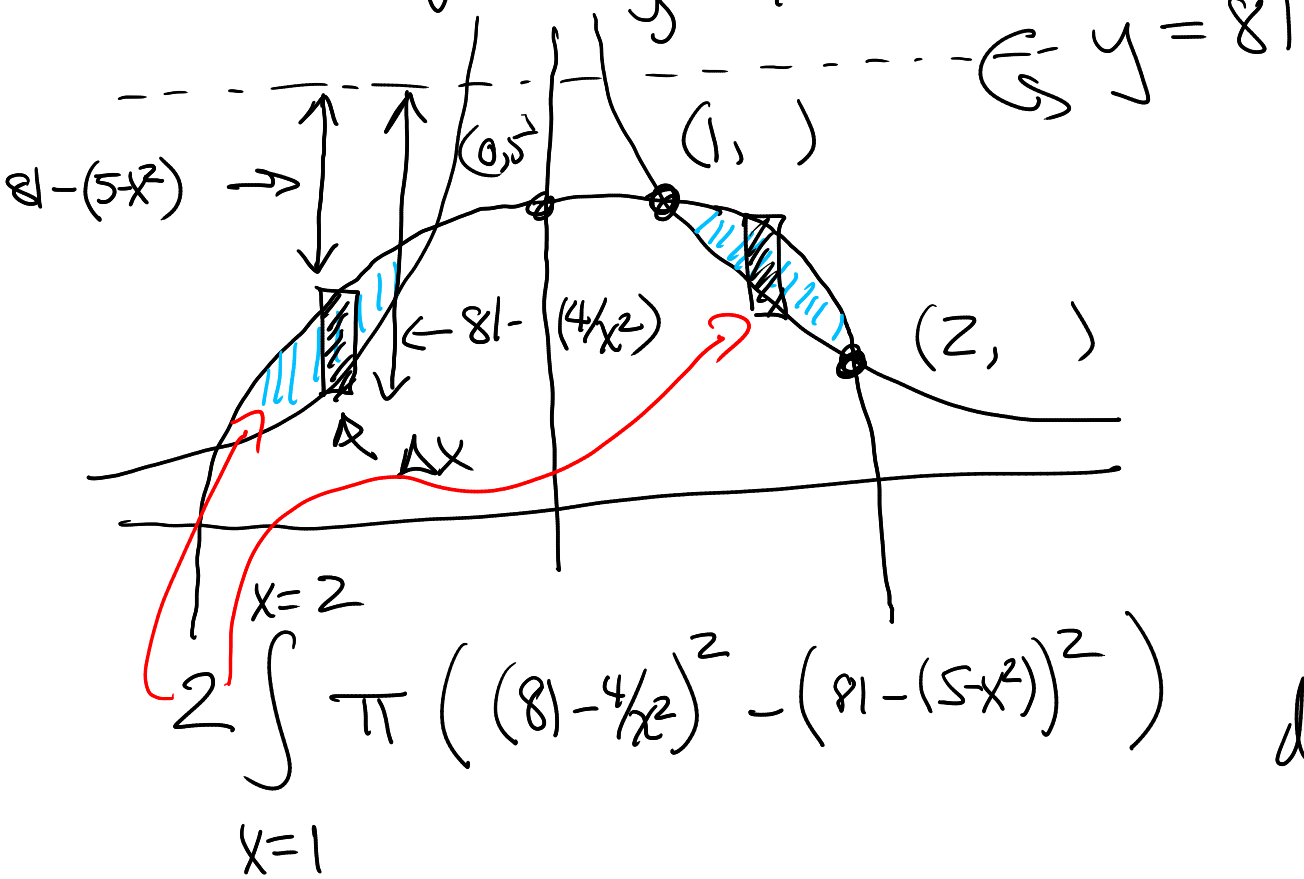
Math 181 Friday, February 5 Section 6.4

6.3.5 $y = 2^2/x^2$, $y = 2^2+1-x^2$

About $y = 81$



$$2\int_{x=1}^{x=2} \pi\left((81-4/x^2)^2 - (81-(5-x^2))^2 \right) dx$$

$4/x^2 = 5-x^2$

$4 = 5x^2 - x^4$

$x^4 - 5x^2 + 4 = 0$ $x = \pm 2, \pm 1$

$(x^2-4)(x^2-1) = 0$

Mon – 6.5

Tue – 7.1

Thu – 7.1

Fri – 7.2

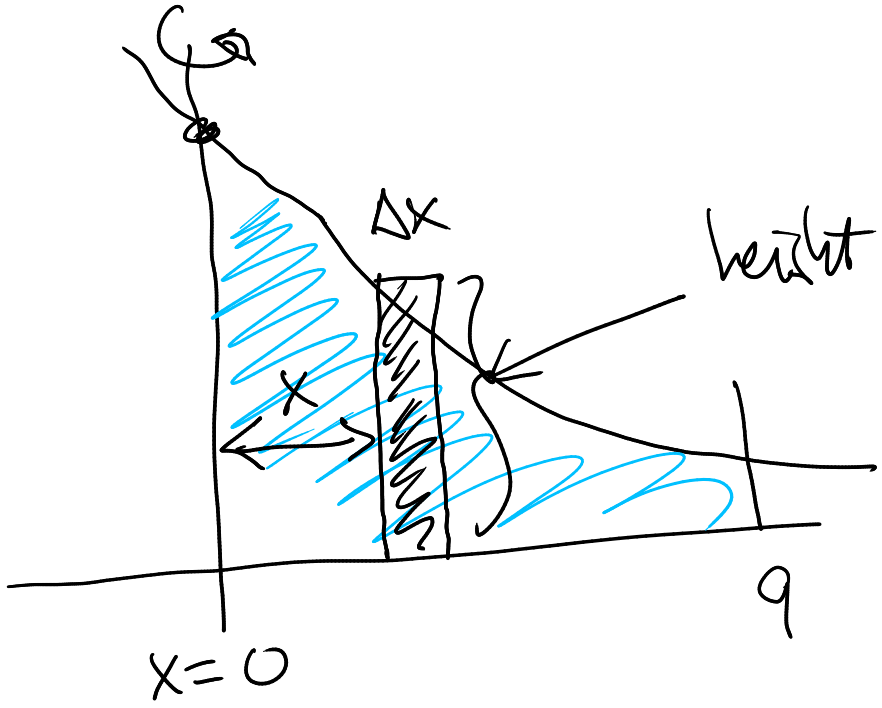
Mon – Review

Tue – Exam 1 Chapters 5 & 6

Preview of 6.4 - preview. 3

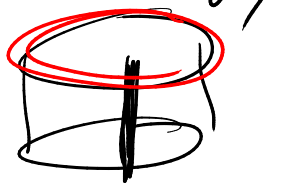
$y = \frac{1}{\sqrt{x^2+6}}$ on $[0, 9]$, about $x = 0$

shells

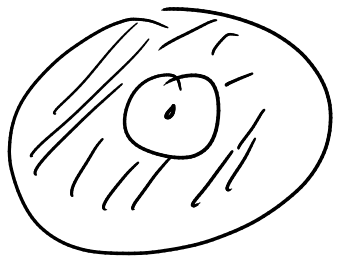


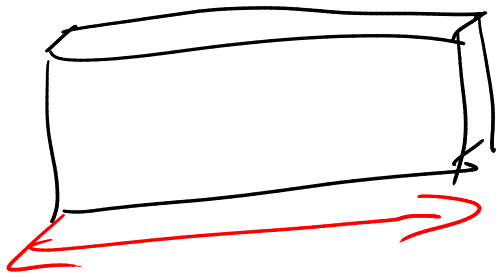
height $\frac{1}{\sqrt{x^2+6}}$

$$\int_{x=0}^{x=9} 2\pi x \frac{1}{\sqrt{x^2+6}}\, dx$$



$\pi R^2 - \pi r^2$

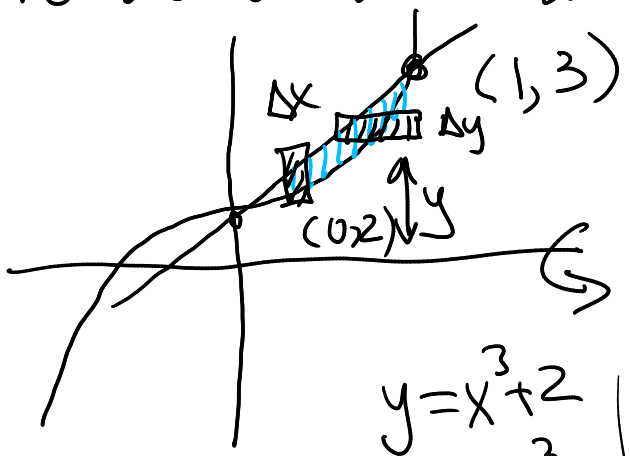




$$y = \frac{1}{\sqrt{x^2+6}} \approx \frac{1}{\sqrt{x^2}} = \frac{1}{x}$$

Ex Region bounded by $y = x^3+2$ & $y = x+2$ in 1st quadrant

Rotate around X-axis



$y = x^3+2$ | $y = x+2$

$y-2 = x^3$ | $y-2 = x$

$(y-2)^{1/3} = x$

Δx ⇒ washers

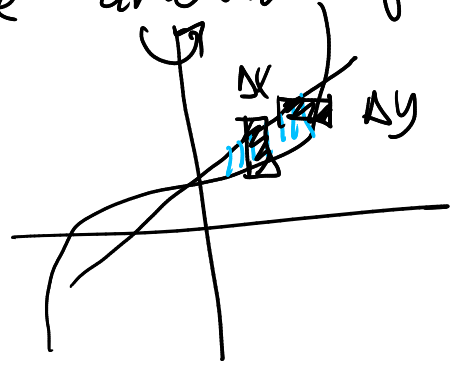
$$\int_{x=0}^{x=1} \pi\left((x+2)^2 - (x^3+2)^2\right)dx$$

Δy ⇒ shells

$$\int_{y=}^{y=} 2\pi y\left((y-2)^{1/3} - (y-2)\right)dy$$

$y =$

Rotate around y-axis



Δx ⇒ shells

$$\int_{x=0}^{x=1} 2\pi x\left((x+2) - (x^3+2)\right)dx$$

Δy ⇒ washers

$$\int_{y=2}^{y=3} \pi\left(\left((y-2)^{1/3}\right)^2 - (y-2)^2\right)dy$$