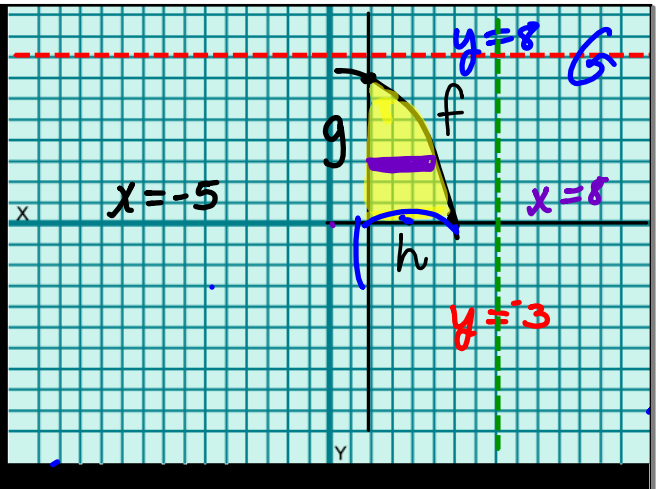
More Disk Method

$$\pi \int_a^b (r_o^2 - r_i^2)\, dx$$



About $y=-3$: $\pi \int_2^6 \left[(f+3)^2 - (h-3)^2\right] dx$

About $y=8$: $\pi \int_2^6 \left[(8-h)^2 - (8-f)^2\right] dx$

About $x=-5$: $\pi \int_0^7 \left[(f--5)^2 - (g--5)^2\right] dy$

$x=8$: $\pi \int_0^7 \left[(8-g)^2 - (8-f)^2\right] dy$

About $x=7$

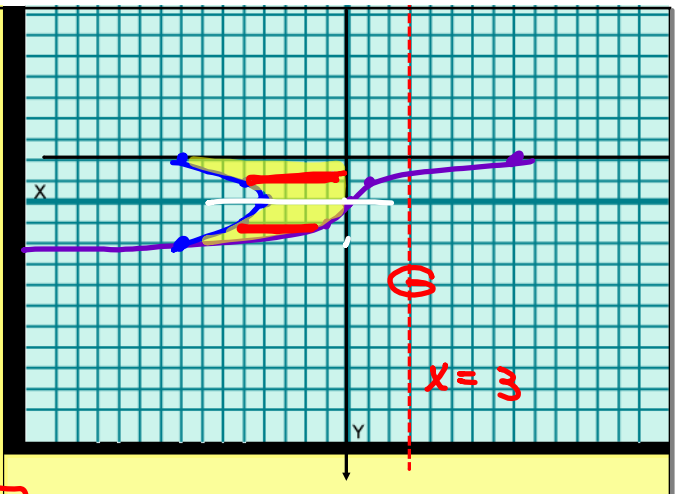
$y = \sqrt[3]{x}$ $\quad y = 2 \quad x = 0$

$x = -y^2 - 4$ about $x = 3$

left 4

0	0
1	1
8	2

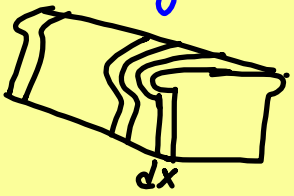
0	0
1	1
4	2



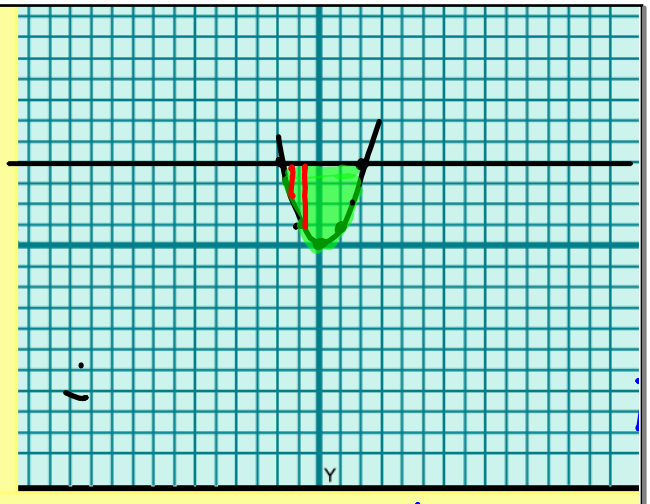
$$\pi \int_{2}^{0} \left[\left(3 - \left(-y^2 - 4\right)\right)^2 - \left(3 - y^3\right)^2 \right] dy$$

$$+ \pi \int_{0}^{2} \left[\left(3 - \left(-y^2 - 4\right)\right)^2 - \left(3 - 0\right)^2 \right] dy$$

Volume by Slicing



$$\int_a^b A(x)\,dx$$



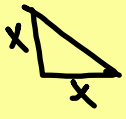
Base is formed by
$y = x^2$ $y = 4$

Cross sections are squares.

$A = s^2$

$$\int_{-2}^{2} (4 - x^2)^2\,dx$$

Isosceles Right Δ's



$A = \frac{1}{2}x^2$ or $\frac{1}{2}s^2$

$$\frac{1}{2}\int_{-2}^{2} (4 - x^2)^2\,dx$$

Semi-circles

$\frac{\pi}{2} r^2$

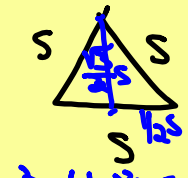
$$\frac{\pi}{2}\int_{-2}^{2} \left(\frac{4 - x^2}{2}\right)^2 dx$$

Base

$y = \sqrt[3]{x}$ $\quad y = -\frac{1}{2}x + 6 \quad x = 0$

0	0
1	1
8	2

Cross sections are equilateral Δ's

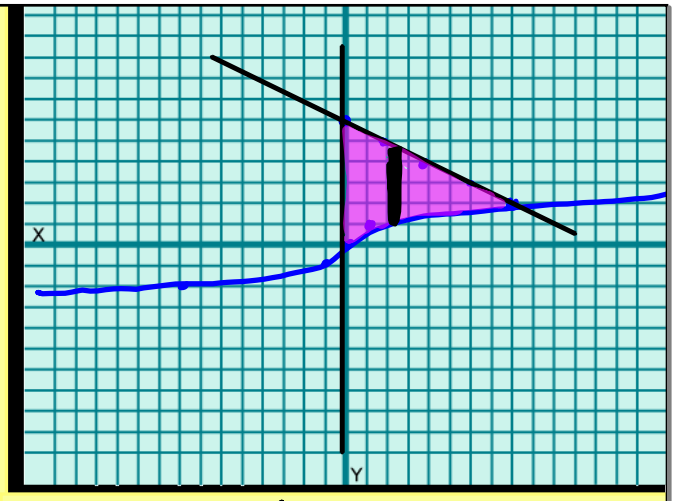


$A = \frac{1}{2}bh$

$A = \frac{1}{2}s \cdot \frac{\sqrt{3}}{2}s$

$A = \frac{\sqrt{3}}{4}s^2$

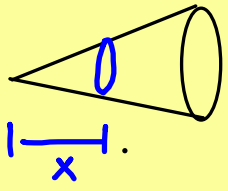
$x^2 + \left(\frac{1}{2}x\right)^2 = s^2$



$$\frac{\sqrt{3}}{4}\int_0^8 \left(-\frac{1}{2}x + 6 - \sqrt[3]{x}\right)^2 dx$$

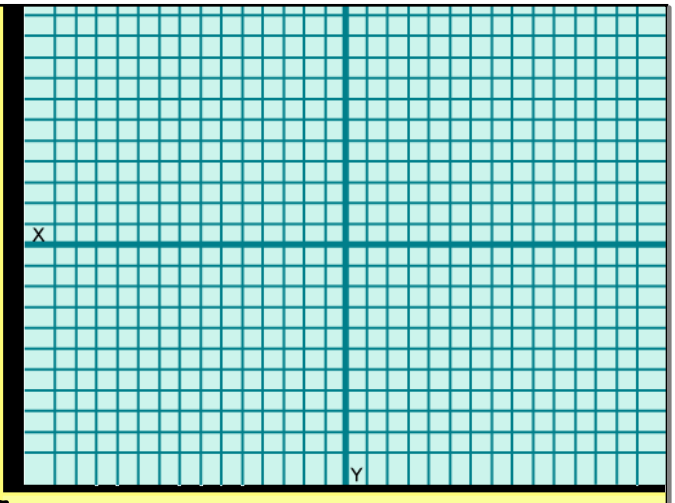
39/ nose cone of space vehicle

$r = \frac{1}{4}x^2$



Circles

$A = \pi r^2$



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