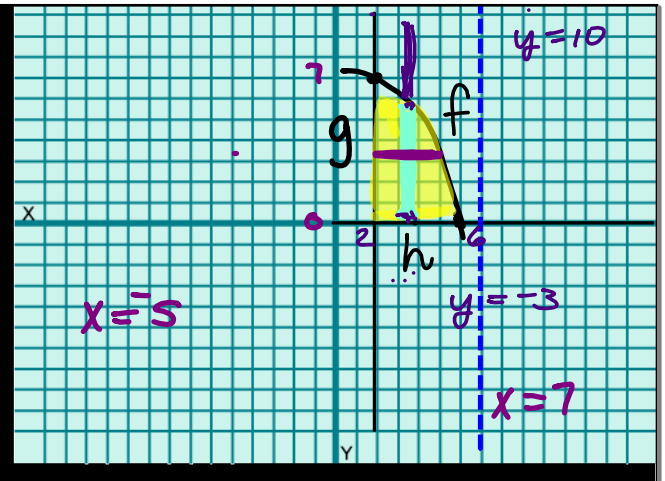
More Disk Method

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

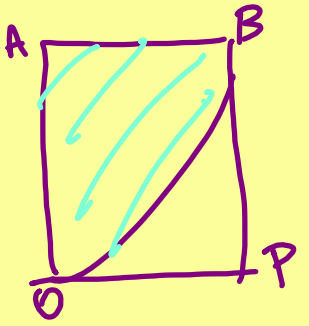
About $y=-3$: $\pi \int_2^6 \left[(f-{-3})^2 - (h-{-3})^2\right] dx$

About $y=10$: $\pi \int_2^6 \left[(10-h)^2 - (10-f)^2\right] dx$

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



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

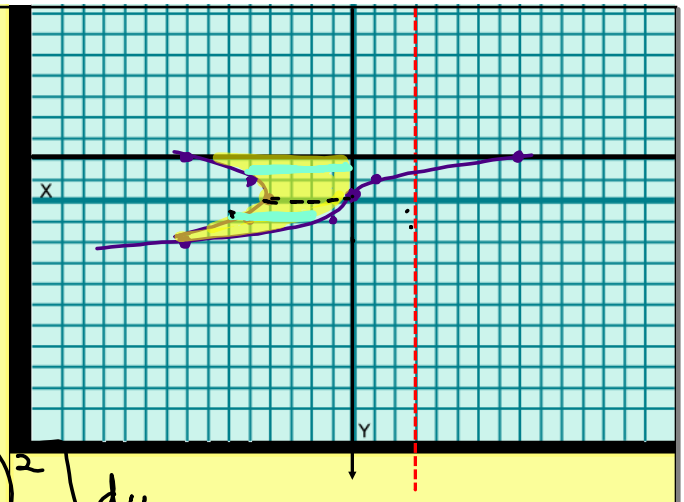


$y^3 = x$

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

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

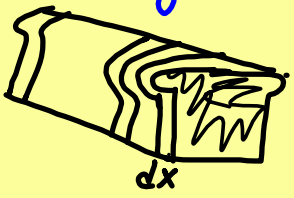
0	0
1	1
8	2



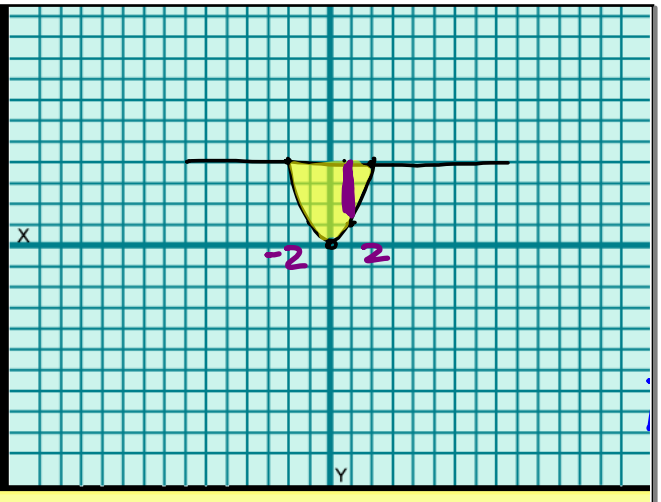
$$\pi \int_{-2}^{0} \left[\left(3 - \left(-y^2 - 4\right)\right)^2 - \left(3 - y^3\right)^2 \right] dy$$

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

Volume by Slicing



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



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

Cross sections are squares.

$A = s^2$

$$V = \int_{-2}^{2} (4 - x^2)^2\,dx = \_\_\_ \text{ units}^3$$

Isosceles Right Δ's

$A = \frac{1}{2} b \cdot h = \frac{1}{2} b^2$

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

Semi-circles

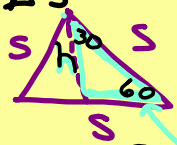
$A = \frac{1}{2}\pi r^2$

$$\frac{1}{2}\pi \int_{-2}^{2} \left(\frac{4 - x^2}{2}\right)^2 dx$$

Base

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

Cross sections are equilateral Δ's

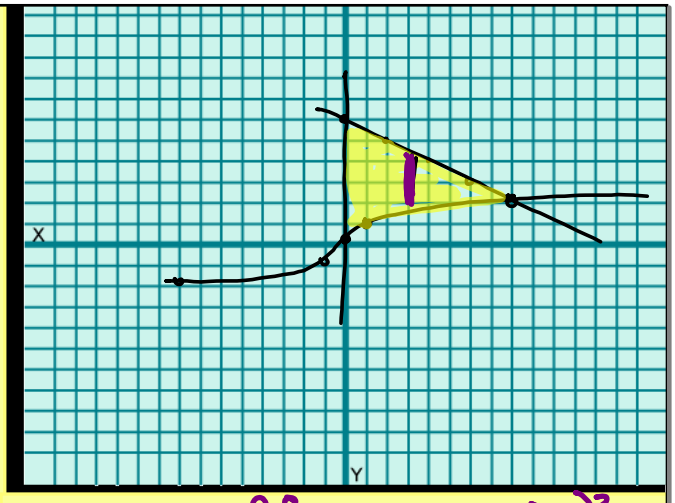


$A = \frac{1}{2}bh$

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

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

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



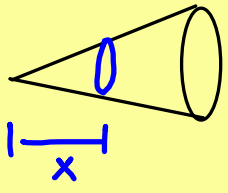
$$\frac{\sqrt{3}}{4}\int_0^8 \left(-\frac{1}{2}x + 6 - \sqrt[3]{x}\right)^2 dx$$

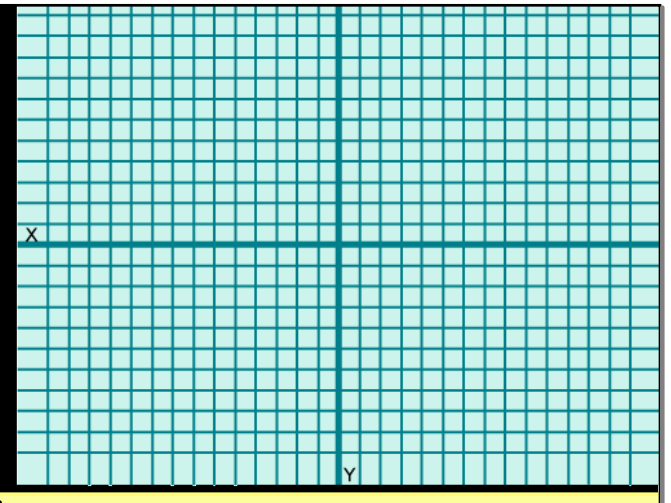
39/ nose cone of space vehicle

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

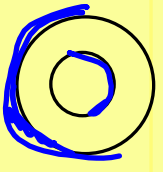
Circles

$A = \pi r^2$





40/ annulus



Dam Video