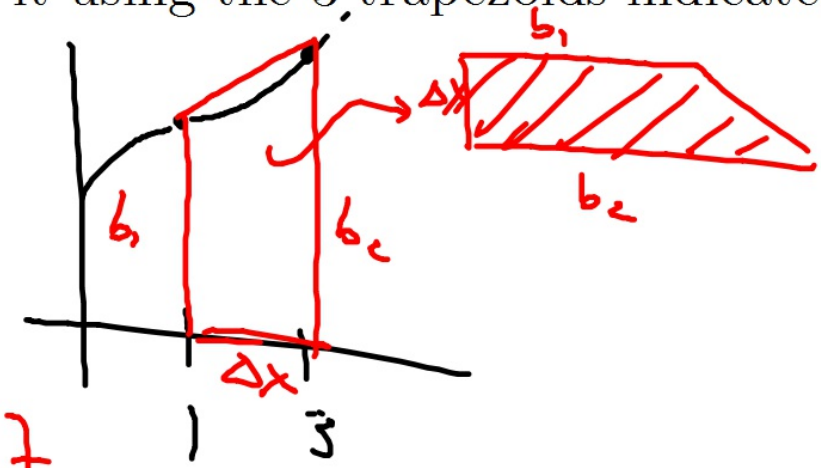
Good afternoon: warm up in notebooks

Water is pouring into a tank at a rate W'(t) L/hr selected values of which are given below. Describe the meaning of $\frac{1}{6}\int_1^7 W'(t)\,dt$ using correct units and then approximate it using the 3 trapezoids indicated by the table.

$95/6 \approx 15.833$ L/hr

$\frac{1}{6}\int_1^7 W'(t)\,dt$ is the average rate of water flow over $t=1$, $t=7$ in L/hr.

t, hr	1	3	6	7
W'(t), L/hr	12	15	20	11



bases

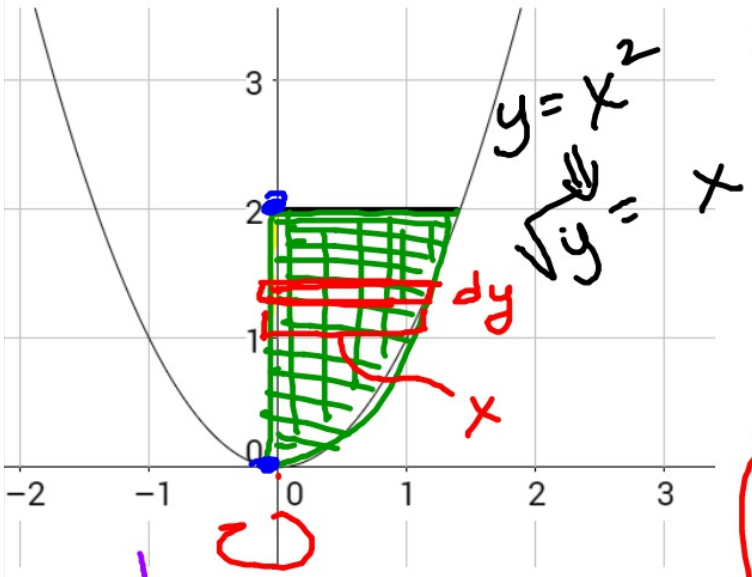
Δt

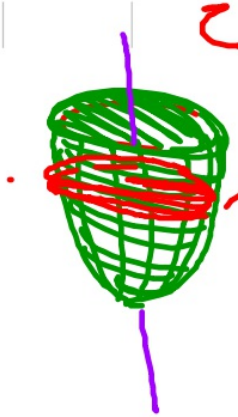
$\frac{1}{2}(12+15)\cdot 2$

$\frac{1}{2}(15+20)\cdot 3$

$\frac{1}{2}(20+11)\cdot 1$

Revolve about the y-axis





$V = \pi \cdot r^2 \cdot h$

$\pi (x)^2 \cdot dy$

$$V = \int_0^2 \pi \cdot \underset{\sqrt{y}}{\cancel{x}}^2 \cdot dy$$

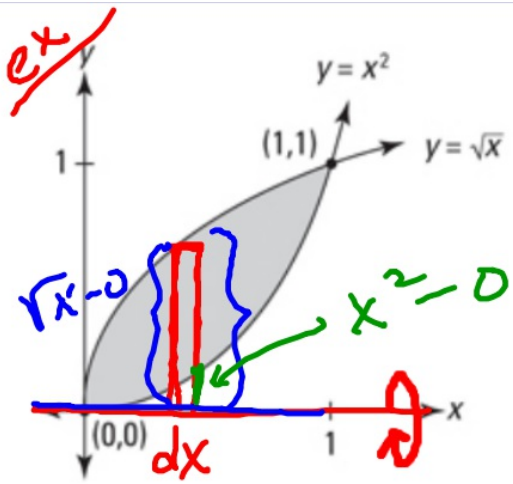
$$V = \pi \int_0^2 (\sqrt{y})^2 \cdot dy$$

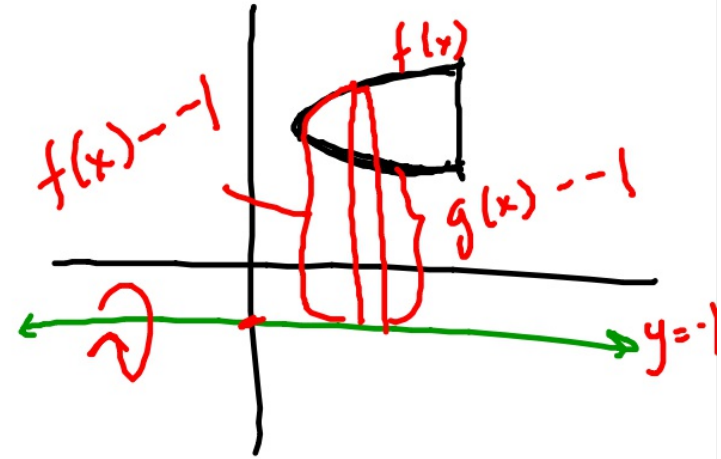
$$\pi \int_0^2 y \cdot dy$$

$$\pi \left[\frac{1}{2} y^2 \right]_0^2$$

$$\pi \left[\frac{1}{2} \cdot 4 - 0 \right] \rightarrow 2\pi$$

Washer method example

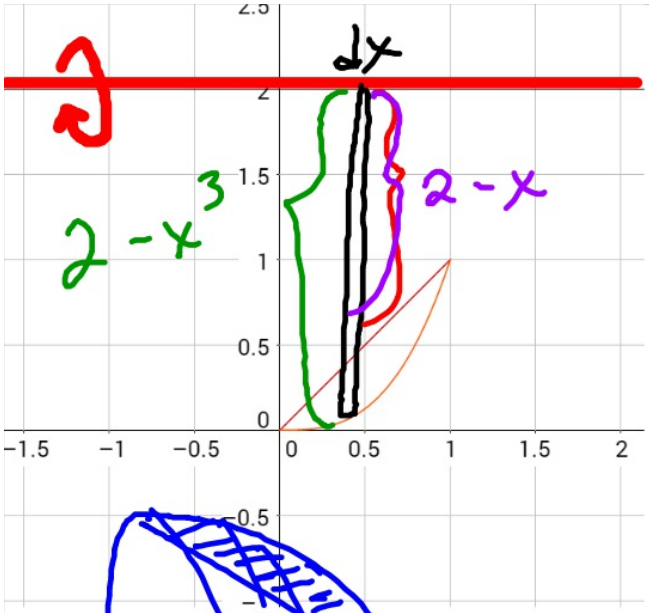




rel. to axis

$$V = \pi \int_0^1 \left(\underbrace{\text{Outer rad}}_{\text{top-bottom}}\right)^2 - \left(\underbrace{\text{inner rad}}_{\text{top-bottom}}\right)^2 \, dx$$

$$\pi \int_0^1 (\sqrt{x} - 0)^2 - (x^2 - 0)^2 \, dx$$



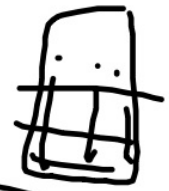
y=x

y=x^3

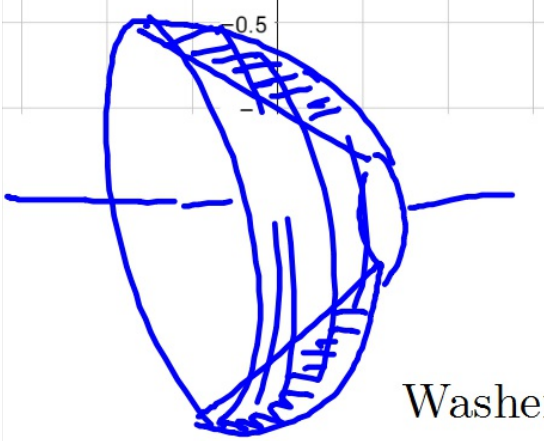
about y=2

$$V = \pi \int_0^1 (2 - x^3)^2 - (2-x)^2 \, dx$$

$$= \pi \int_0^1 (2-x^3)^2 - (2-x)^2 \, dx$$

π 

$$\frac{17}{21}\pi$$



Washer method example,
axis above region

Volume:

- disc, x-axis
- disc, y-axis
- washer, axis above region
- washer, axis below region

After spring break:

- washer, axis right of region
- washer, axis left of region

- volume by cross sections!!

Work quietly on the practice assessment plz