

9.7 Shell Method I

Wednesday, June 12, 2019 7:15 AM

$y = 4x - 2x^2$
X-axis A.R. $x=4$



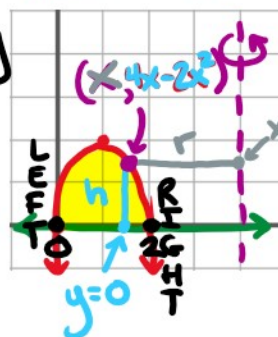
Washer Method
FAILS

Washer Method

$$V = \pi \int_B^T [(R)^2 - (r)^2] dy$$

$y = 4x - 2x^2$
 $x =$ impossible to solve for x in terms of y

$y = 4x - 2x^2$
X-axis A.R. $x=4$

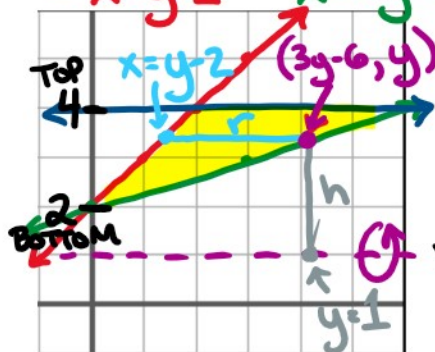


Shell Method

$$V = 2\pi \int_L^R r \cdot h dx$$

$$V = 2\pi \int_0^2 (4-x)(4x-2x^2-0) dx = 16\pi \text{ or } 50.27$$

$y = x+2$ $y = \frac{1}{3}x+2$ $y=4$ A.R. $y=1$
 $x=y-2$ $x=3y-6$



Shell Method dy

$$V = 2\pi \int_B^T r \cdot h dy$$

$$V = 2\pi \int_2^4 (3y-6-(y-2))(y-1) dy = 58.64$$

- ① Draw a line segment in the interior of the figure that is parallel to A.R.
- ② Connect this line segment to the A.R. at a right angle
- ③ Point of intersection of the radius and height:
(x , equation in terms of x) if dx OR (equation in terms of y , y) if dy