

November 1

What are your goals for
this month?

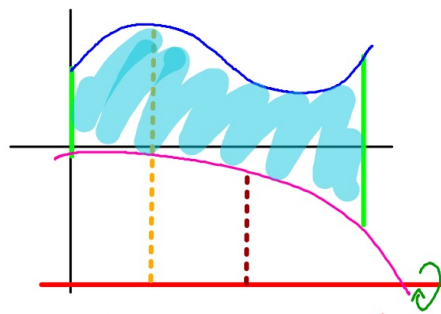


November 1

Students will verbally explain how to
find the volume using the disk method
(using the words:
axis of rotation, outside radius, inside radius...)



Find the volume of the solid generated by revolving the region bounded by $y = \sin(x) + 3$, $y = -x^2$ on $[0, \pi]$ about $y = -15$

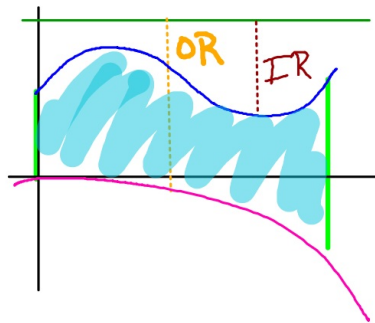


$$\begin{aligned} OR &= \sin x + 3 - (-15) \\ OR &= \sin x + 18 \end{aligned} \quad \begin{aligned} IR &= -x^2 - (-15) \\ IR &= (-x^2 + 15) \end{aligned}$$

$$V = \pi \int_0^{\pi} (\sin x + 18)^2 - (-x^2 + 15)^2 dx$$

$$1990.033$$

Find the volume of the solid generated by revolving the region bounded by $y = \sin(x) + 3$, $y = -x^2$ on $[0, \pi]$ about $y = 10$



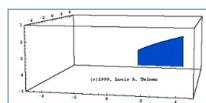
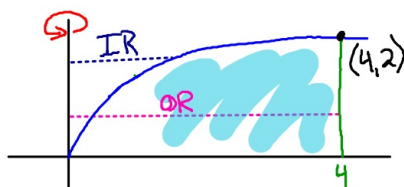
$$\begin{aligned} OR &= 10 - (-x^2) \\ OR &= 10 + x^2 \\ IR &= 10 - (\sin x + 3) \\ IR &= 7 - \sin x \end{aligned}$$

$$V = \pi \int_0^{\pi} (10 + x^2)^2 - (7 - \sin x)^2 dx$$

$$= 1428.051$$

Find the volume of the solid generated by revolving the region bounded by $y = \sqrt{x}$, $x = 0$ and $x = 4$ about the y-axis

in the first quadrant



$$OR = 4$$

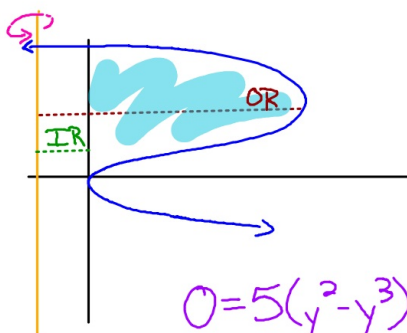
$$IR = y^2$$

$$y = \sqrt{x} \rightarrow x = y^2$$

$$V = \pi \int_0^2 4^2 - (y^2)^2 dy$$

$$= 80.425$$

Find the volume of the solid generated by revolving the region bounded by $x = 5(y^2 - y^3)$ and the y-axis about the line $x = -3$



$$0 = 5(y^2 - y^3)$$

$$0 = y^2(1 - y)$$

$$y = 0, 1$$

$$OR = 5(y^2 - y^3) - (-3)$$

$$OR = 5(y^2 - y^3) + 3$$

$$IR = 0 - (-3)$$

$$IR = 3$$

$$V = \pi \int_0^1 (5(y^2 - y^3) + 3)^2 - 3^2 dy$$

$$= 8.602$$