Stand and Deliver

Disk Method 7.2

$$\pi \int_a^b R(x)^2\,dx$$

$$\pi \int_a^b (top - bottom)^2\,dx$$

Radius:
R(x): Top - Bottom

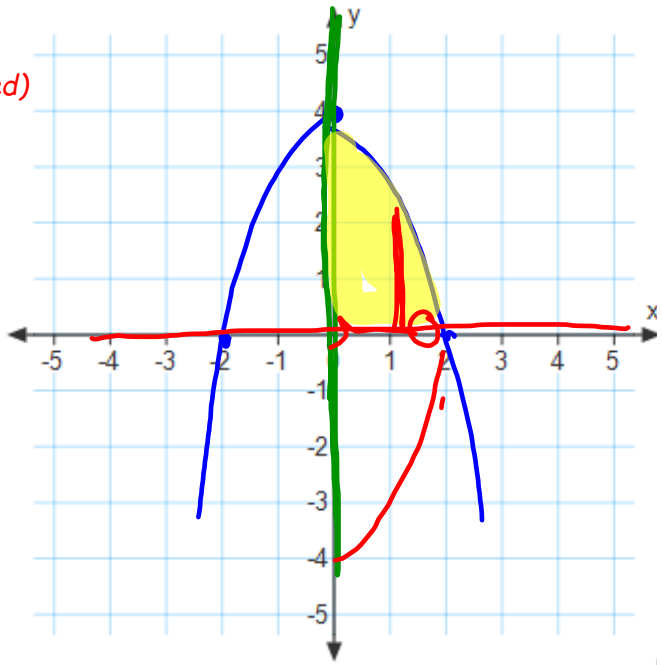
$$\pi \int_c^d R(y)^2\,dy$$

$$\pi \int_c^d (right - left)^2\,dy$$

Radius:
R(y): Right - Left

Find the volume formed by $y = 4 - x^2$ and $x = 0$, about the x - axis.

you must clearly shade and label:
the axis of revolution (axis man)
the cross sectional shape (his arm rotated)

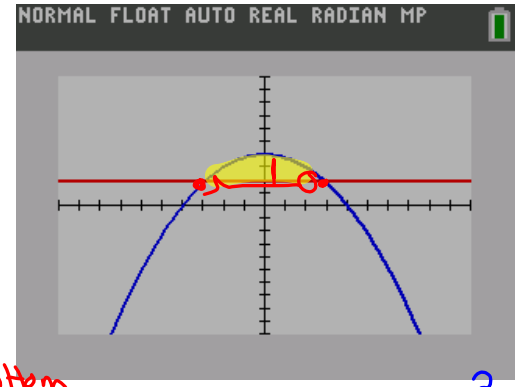


$$\pi \int_0^2 (4 - x^2 - 0)^2\,dx$$

Top - Bottom

$$\pi \int_0^2 (4 - x^2)^2\,dx$$

Find the volume formed by $y = 4 - \frac{x^2}{4}$ and y = 2 about y = 2



$$\pi \int_{-\sqrt{8}}^{\sqrt{8}} \left(4 - \frac{x^2}{4} - 2\right)^2 dx$$

Top − Bottom

$2 = 4 - \frac{x^2}{4}$

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

$x^2 = 8$

$x = \pm\sqrt{8}$

$\pm 2\sqrt{2}$

For each problem, find the volume of the solid that results when the region enclosed by the curves is revolved about the the given axis. Set up, but do not evaluate the integral. You may use the provided graph to sketch the curves and shade the enclosed region.

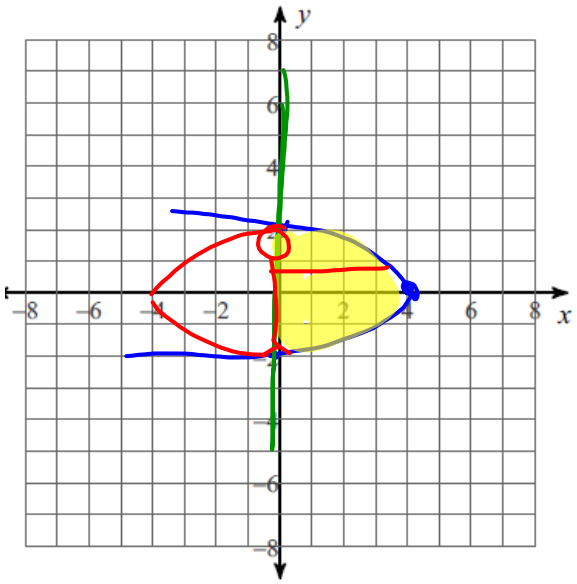
$x = -y^2 + 4, \quad x = 0$

Axis: $x = 0$

about x=0

$$\pi \int_{-2}^{2} (-y^2 + 4 - 0)^2 \, dy$$

Right − Left



Attachments

Volumes by Revolution.gsp

Volumes on Base.gsp