AP Calculus DS
Assessments from Monday are being passed back

Absent Monday? You will take it soon--I will return them to you asap so you know if you need to re-assess

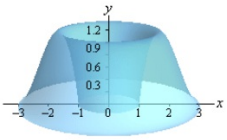
This DS is for you to re-assess whatever is needed. Please know what skills you need and have the homework out for me to check.

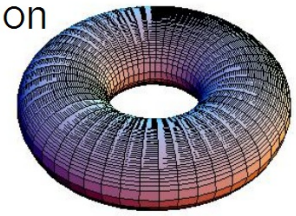
No reassessments? Work on/double check AP q's due today.

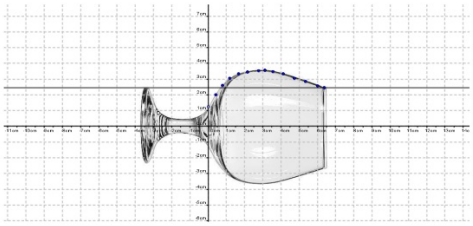
Bring colored pencils if you prefer to use your own

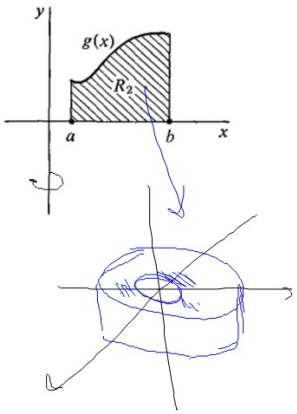
turn scantrons in please

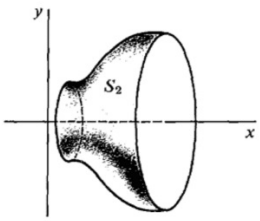
Volume of Revolution

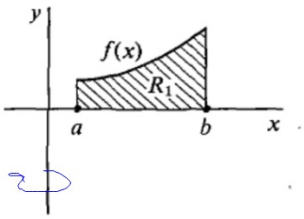


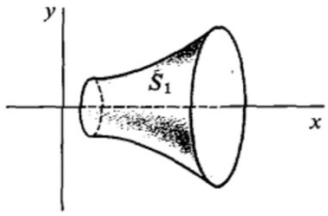




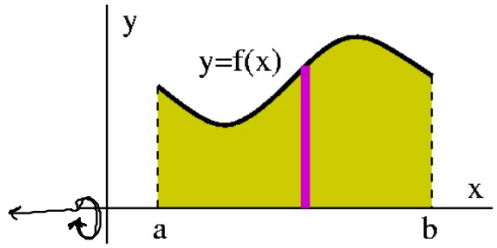


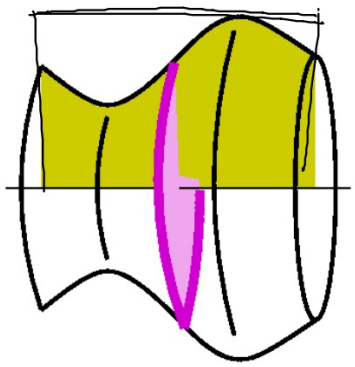




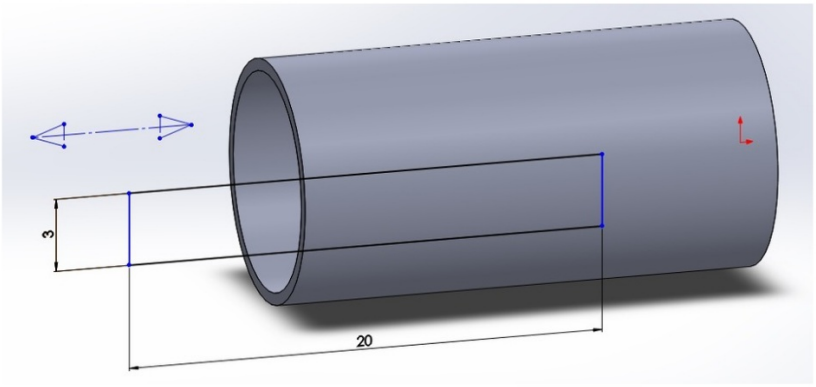


Volumes of Solids of Revolution (Disk method)



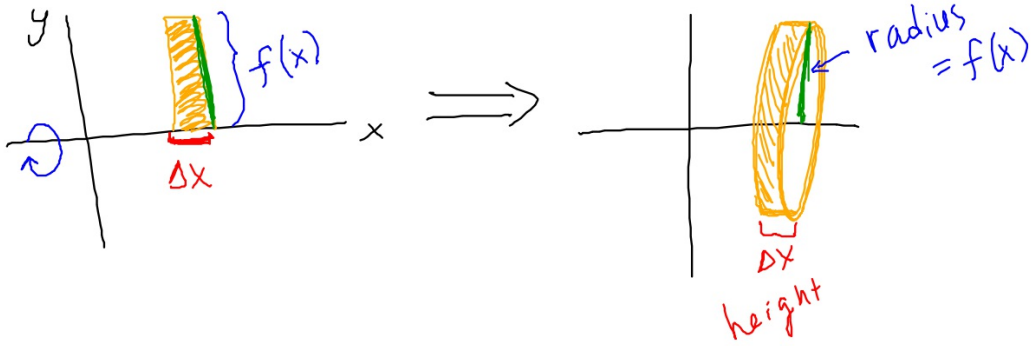


What happens when you revolve a rectangle around an axis?

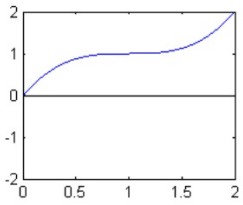

3
20

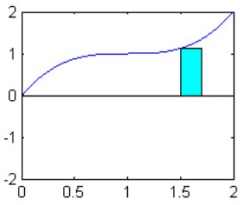
So a single rectangle becomes a cylindrical "disk"

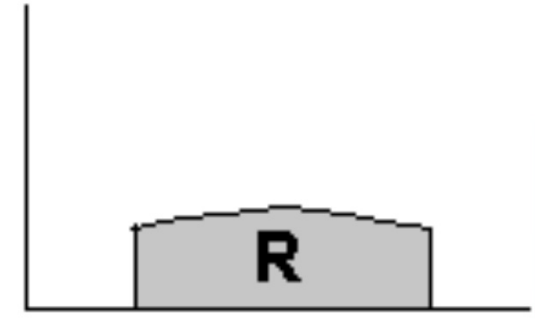
What is its radius? What is its height/depth?

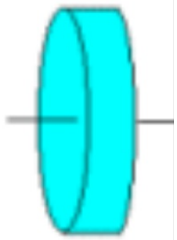



Pillsbury
Chocolate Chip COOKIES

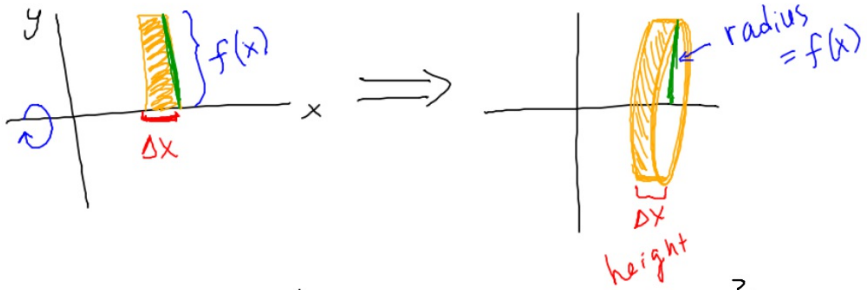

2
1
0
-1
-2
0
0.5
1
1.5
2


2
1
0
-1
-2
0
0.5
1
1.5
2


R



Volume of solid = sum of volume of slices



$V_{cyl} = \pi r^2 \cdot h$

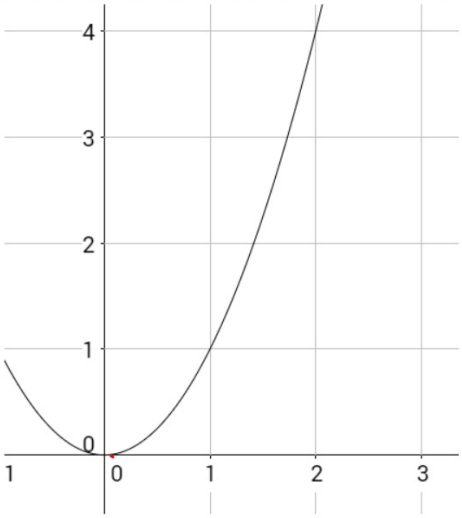
Volume of one disk $= \pi \cdot [f(x)]^2 \cdot \Delta x$

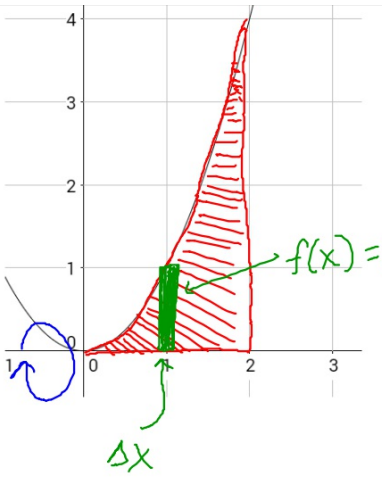
($[f(x)]$: radius; Δx: height)

$$V = \text{Sum of all disks} = \int_a^b \pi \cdot [f(x)]^2 \cdot dx$$

Get some colored pencils

Concrete Example: Region bounded $y = x^2$, x-axis, and $x=2$ revolved around the x-axis.

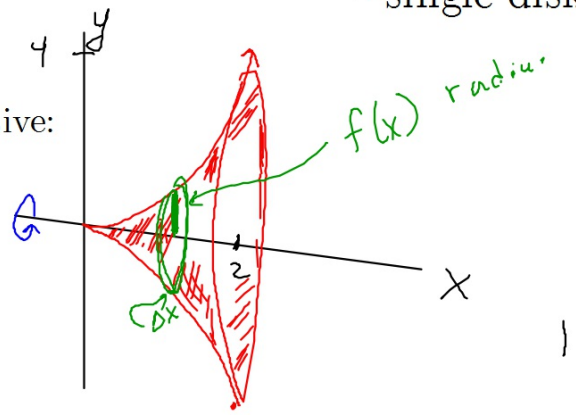




$y = x^2$, x-axis, $x = 2$ are bounds.
Revolve around x-axis.

Always sketch:
- revolution axis
- single rectangle
- single disk

In perspective:



$$V = \int_0^2 \pi \cdot (x^2)^2 \cdot dx$$

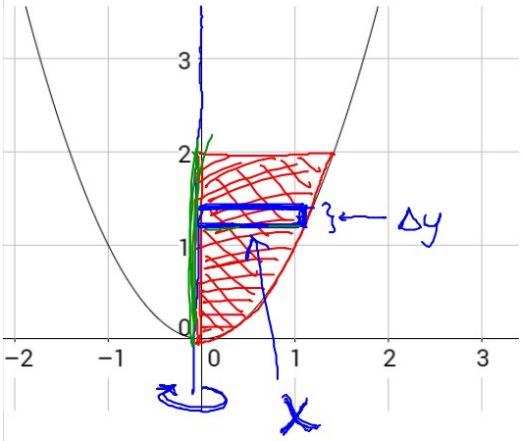
$$\pi \int_0^2 x^4 \cdot dx$$

$$\pi \left[\frac{1}{5} x^5 \right]_0^2$$

$$\pi \left(\frac{32}{5} \right) \Rightarrow \frac{32}{5} \pi$$

Axes of Revolution: x-axis (just did it)
y-axis (about to do it)
other vertical + horizontal lines (~~tonight's hw video~~)

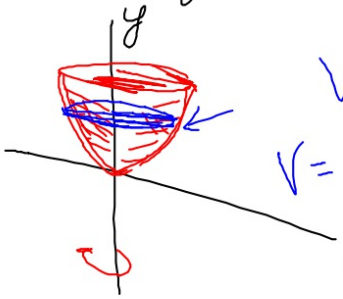
http://www.geogebra.org/material/show/id/18475



Revolve about the y-axis

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

- $y = 2$ is a boundry along w/ y-axis.



$V = \pi \cdot x^2 \cdot \Delta y$

$V = \int_0^2 \pi x^2 \, dy$

$+ \int_0^2 \pi \cdot (\sqrt{y})^2 \, dy$

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

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

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

2π

Homework: p. 453 # 3, 4, 7, 8