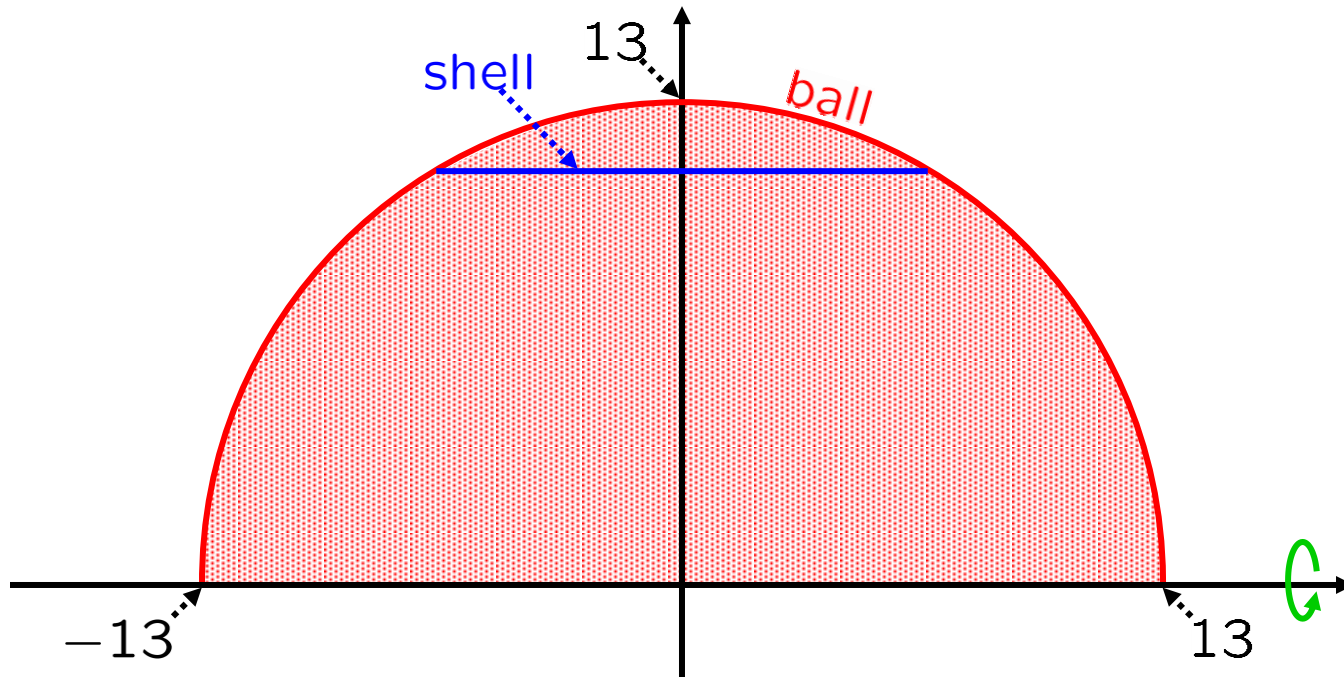
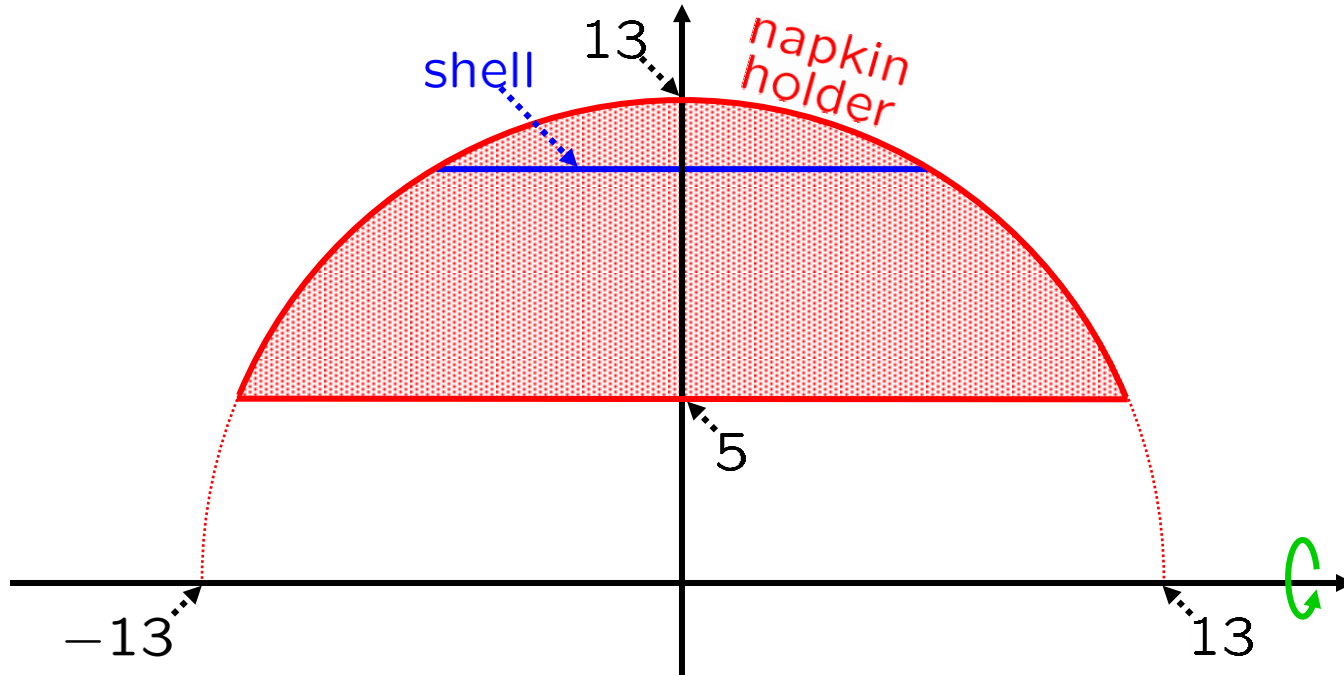


CALCULUS
Volume by cylindrical shells:
Problems
NEW

NEW 0750-1. Using the shell method, find the volume in a ball of radius 13, following the diagram shown below.



0750-2. We create a napkin holder by drilling a cylindrical hole of radius 5 through the middle of a ball of radius 13, as shown below. Using the shell method, find its volume.



0750-3. Let R be the region bounded by

$$y = \frac{1}{5}(x - 2)^2(x - 4)^2 + \frac{6}{5} \text{ and } y = 3.$$

- Sketch R .
- Using whatever method you prefer, set up an integral to compute the volume of the solid obtained by rotating R about the x -axis. Do not evaluate the integral.
- Using whatever method you prefer, set up an integral to compute the volume of the solid obtained by rotating R about the y -axis. Do not evaluate the integral.
- Using whatever method you prefer, set up an integral to compute the volume of the solid obtained by rotating R about the line $x = \frac{1}{2}$. Do not evaluate the integral.

0750-4. NEW Let R be the region bounded by

$$x = 1 + e^{-y^2}, \quad x = 1, \quad y = 0 \quad \text{and} \quad y = 2.$$

- a. Sketch R .
- b. Using whatever method you prefer, find the volume of the solid obtained by rotating R about the x -axis.

0750-5. NEW Let R be the region bounded by

$$x = y^2 + y, \quad x = 0 \quad \text{and} \quad y = 1.$$

- a. Sketch R .
- b. Using whatever method you prefer, find the volume of the solid obtained by rotating R about the line $x = -1$.

0750-6. Let R be the region bounded by
 $x = \sin y$, $x = 0$, $y = \pi/8$ and $y = 3\pi/4$.

Set up, but do not evaluate, an integral that yields the volume of the solid obtained by rotating R about the line $y = 3\pi/2$.

0750-7. Describe the solid of revolution whose volume is given by

$$2\pi \int_2^5 x \left[\left(e^{4x} \right) - \left(\sin(\pi x) \right) \right] dx.$$

Do not evaluate this integral.

0750-8. Describe the solid of revolution whose volume is given by

$$2\pi \int_2^5 [x + 6] \left[\left(e^{4x} \right) - \left(\sin(\pi x) \right) \right] dx.$$

Do not evaluate this integral.