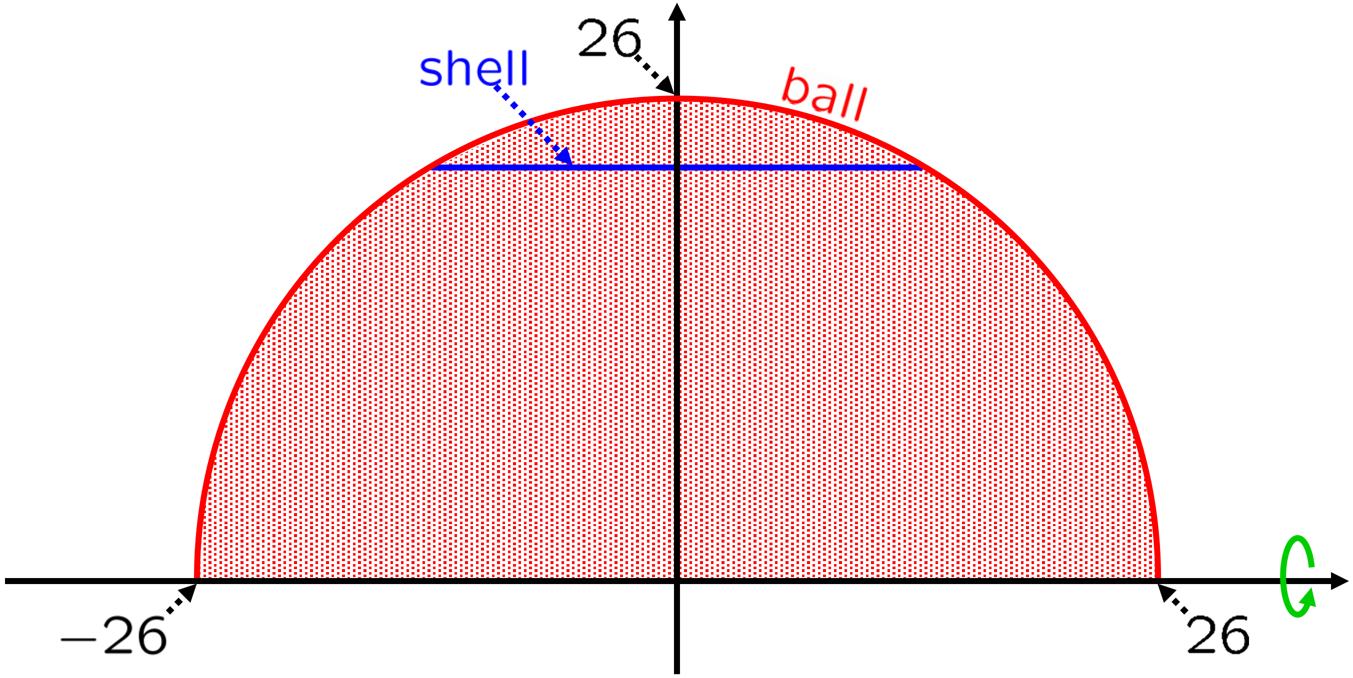
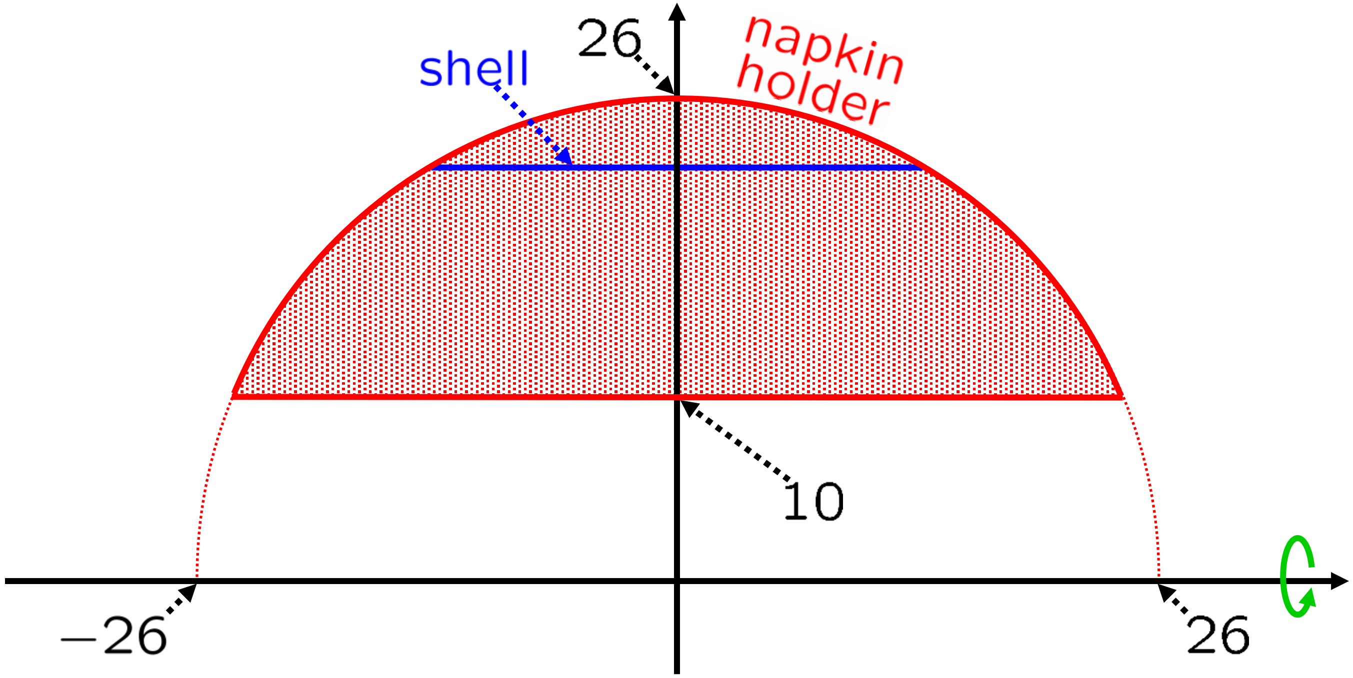
CALCULUS
Volume by cylindrical shells: Problems

NEW

NEW 0750-1. Using the shell method, find the volume in a ball of radius 26, following the diagram shown below.



NEW 0750-2. We create a napkin holder by drilling a cylindrical hole of radius 10 through the middle of a ball of radius 26, as shown below. Using the shell method, find its volume.



0750-3. Let R be the region bounded by
NEW

$$y = (x-2)^2(x-4)^2 + 1 \text{ and } y = 10.$$

a. Sketch R.

b. 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 evalute the integral.

c. 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 evalute the integral.

d. Using whatever method you prefer, set up an integral to compute the volume of the solid obtained by rotating R about the line $x = 6$. Do not evalute the integral.

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

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

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. Let R be the region bounded by
NEW

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

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
NEW
$x = \sin y$, $x = 0$, $y = \pi/4$ and $y = \pi$.

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

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

$$2\pi \int_3^5 x \left[\left(e^{8x} \right) - (\sin(\pi x)) \right] dx.$$

Do not evaluate this integral.

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

$$2\pi \int_3^5 [x+4] \left[\left(e^{8x} \right) - (\sin(\pi x)) \right] dx.$$

Do not evaluate this integral.