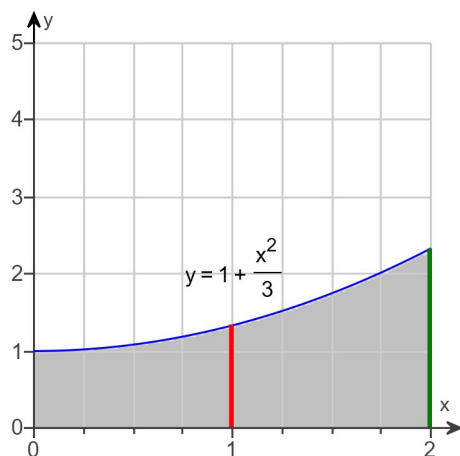| **Student:** Cole Lamers **Date:** 10/19/19	**Instructor:** Viktoriya Shcherban **Course:** Calc 1 11:30 AM / Internet (81749&81750) Shcherban	**Assignment:** 6.2 Volumes Using Cylindrical Shells

1.

Use the shell method to find the volume generated by revolving the shaded region about the y-axis.
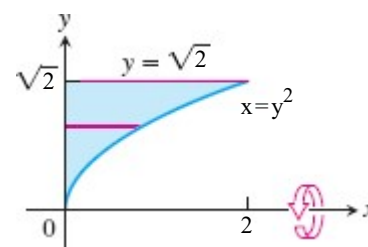

$$y = 1 + \frac{x^2}{3}$$

The volume generated by revolving the shaded region about the y-axis is
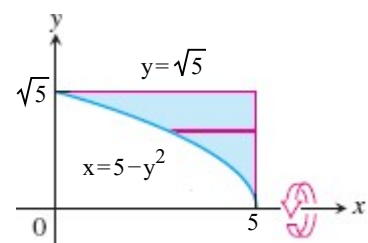
$$\frac{20\pi}{3}$$ cubic units.

(Type an exact answer, using π as needed, or round to the nearest tenth.)

2. Use the shell method to find the volume of the solid generated by revolving the shaded region about the x-axis.

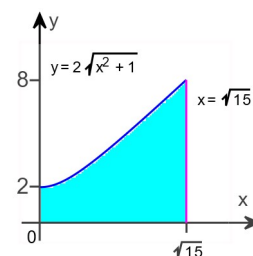$$y = \sqrt{2}$$
$$x = y^2$$

The volume is 2π .
(Type an exact answer, using π as needed.)

3. Use the shell method to find the volume of the solid generated by revolving the shaded region about the x-axis.

$$y = \sqrt{5}$$
$$x = 5 - y^2$$

The volume is $\dfrac{25\pi}{2}$.

(Type an exact answer in terms of π.)

4. Use the shell method to find the volume of the solid generated by revolving the shaded region about the y-axis.

The volume is ⟨ 84π ⟩.
(Type an exact answer, using π as needed.)

5. Use the shell method to find the volume generated by revolving the region bounded by y = 1.5x, y = − 0.6x, and x = 3 about the y-axis.

The volume generated by revolving the region bounded by y = 1.5x, y = − 0.6x, and x = 3 about the y-axis is ⟨ 118.8 ⟩ cubic units.
(Round to the nearest tenth as needed.)

6. Use the shell method to find the volume of the solid generated by revolving the regions bounded by the curves and lines about the y-axis.

$y = x^2, \quad y = 10 - 9x, \quad x = 0, \text{ for } x \geq 0$

The volume is ⟨ $\dfrac{7\pi}{2}$ ⟩.
(Type an exact answer in terms of π.)

7. Use the shell method to find the volume generated by revolving the region bounded by $x = 2\sqrt{y}$, x = − 0.4y, and y = 20 about the x-axis.

The volume generated by revolving the region bounded by $x = 2\sqrt{y}$, x = − 0.4y, and y = 20 about the x-axis is ⟨ 15693.8 ⟩ cubic units.
(Round to the nearest tenth.)

8. Use the shell method to find the volume generated by revolving the region bounded by $x = 9y - y^2$ and x = 0 about the x-axis.

The volume generated by revolving the region bounded by $x = 9y - y^2$ and x = 0 about the x-axis is ⟨ $\dfrac{2187\pi}{2}$ ⟩ cubic units.
(Type an exact answer, using π as needed, or round to the nearest tenth.)

9. Use the shell method to find the volume of the solid generated by revolving the regions bounded by the curves and lines about the x-axis.

$y = \sqrt{x}, \quad y = 0, \quad y = \dfrac{x - 4}{3}$

The volume is ⟨ 64π ⟩.
(Type an exact answer, using π as needed.)

10. Use the shell method to find the volume of the solid generated by revolving the region bound by $y = 2x$, $y = 0$, $x = 3$ about the following lines.

    a. The y-axis   **b.** The line $x = 10$ **c.** The line $x = -9$

    d. The x-axis   **e.** The line $y = 7$ **f.** The line $y = -2$

a. The volume of the given solid is 36π cubic units.
(Type an exact answer in terms of π.)

b. The volume of the given solid is 144π cubic units.
(Type an exact answer in terms of π.)

c. The volume of the given solid is 198π cubic units.
(Type an exact answer in terms of π.)

d. The volume of the given solid is 36π cubic units.
(Type an exact answer in terms of π.)

e. The volume of the given solid is 90π cubic units.
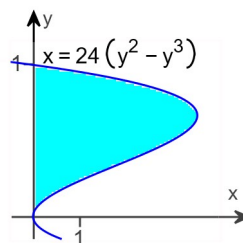(Type an exact answer in terms of π.)

f. The volume of the given solid is 72π cubic units.
(Type an exact answer in terms of π.)

11. Use the shell method to find the volumes of the solids generated by revolving the shaded region about the indicated axes.

    a. The x-axis   **b.** The line $y = 1$

    c. The line $y = 8/5$ **d.** The line $y = -2/5$

$$x = 24\left(y^2 - y^3\right)$$

a. The volume is $\dfrac{12\pi}{5}$.
(Type an exact answer in terms of π.)

b. The volume is $\dfrac{8\pi}{5}$.
(Type an exact answer in terms of π.)

c. The volume is 4π .
(Type an exact answer in terms of π.)

d. The volume is 4π .
(Type an exact answer in terms of π.)

12. Find the volumes of the solids generated by revolving the triangle with vertices (2,2), (2,6), and (4,6) about **a)** the x-axis, **b)** the y-axis, **c)** the line x = 8, and **d)** the line y = 2.

The volume of the solid generated by revolving the triangle with vertices (2,2), (2,6), and (4,6) about the x-axis is

$\dfrac{112\pi}{3}$ cubic units.

(Type an exact answer, using π as needed, or round to the nearest tenth.)

The volume of the solid generated by revolving the triangle with vertices (2,2), (2,6), and (4,6) about the y-axis is

$\dfrac{64\pi}{3}$ cubic units.

(Type an exact answer, using π as needed, or round to the nearest tenth.)

The volume of the solid generated by revolving the triangle with vertices (2,2), (2,6), and (4,6) about the line x = 8 is

$\dfrac{128\pi}{3}$ cubic units.

(Type an exact answer, using π as needed, or round to the nearest tenth.)

The volume of the solid generated by revolving the triangle with vertices (2,2), (2,6), and (4,6) about the line y = 2 is

$\dfrac{64\pi}{3}$ cubic units.

(Type an exact answer, using π as needed, or round to the nearest tenth.)

13. Find the volumes of the solids generated by revolving the region between $y = 5\sqrt{x}$ and $y = \dfrac{x^2}{2}$ about **a)** the x-axis and **b)** the y-axis.

The volume of the solid generated by revolving the region between $y = 5\sqrt{x}$ and $y = \dfrac{x^2}{2}$ about the x-axis is

507.6 cubic units.
(Round to the nearest tenth.)

The volume of the solid generated by revolving the region between $y = 5\sqrt{x}$ and $y = \dfrac{x^2}{2}$ about the y-axis is

218.7 cubic units.
(Round to the nearest tenth.)