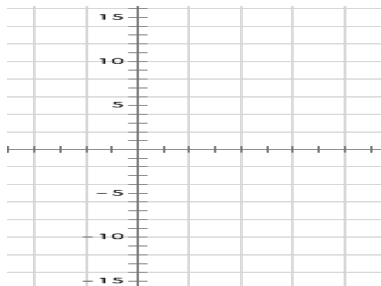


## 7.3.1

### 7.3.1 Solids of Revolution

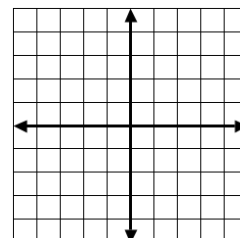
Consider the region bound by  $f(x) = x^2$  and the x-axis over  $[0,4]$



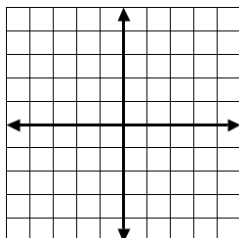
Rotate the region about the x-axis. We call this a solid of revolution. How could we find the volume of the solid?

Find the volume of the solid generated by rotating the enclosed region about the x-axis.

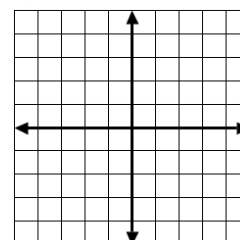
1.  $y = \sqrt{x}$ ,  $x = 4$ ,  $y = 0$



2.  $y = \frac{1}{2}x$ ,  $y = 0$ ,  $x = 10$

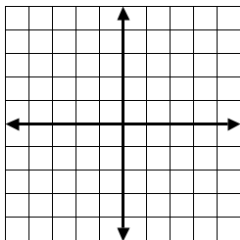


3.  $y = e^x$ ,  $x = 0$ ,  $x = \ln 4$ ,  $y = 0$

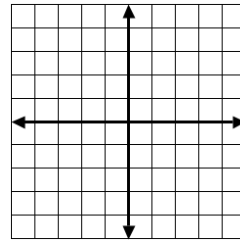


## 7.3.1

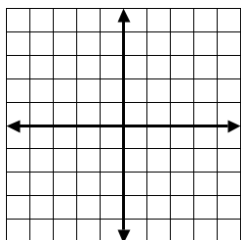
4.  $y = \sqrt{4 - x^2}$ ,  $y = 0$



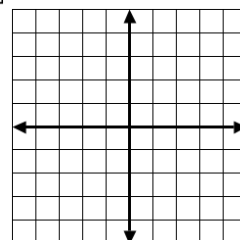
5.  $y = \sin x$ ,  $y = 0$   $[0, \pi]$



6.  $y = x^2$ ,  $y = x^3$



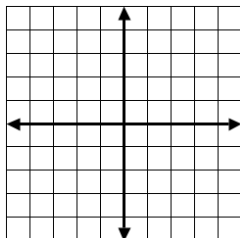
7.  $y = \sin x$ ,  $y = \sqrt{2}$   $\left[\frac{\pi}{4}, \frac{3\pi}{4}\right]$



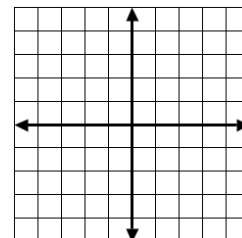
### 7.3.1

Find the volume of the solid generated by rotating the enclosed region about the y-axis.

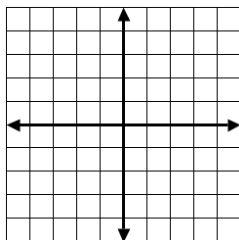
8.  $y = x^2$ ,  $x = 0$ ,  $y = 4$



9.  $y = 2x$ ,  $x = 0$ ,  $y = 6$

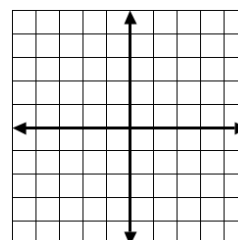


10.  $y = x^2$ ,  $x = 4$ ,  $y = 0$



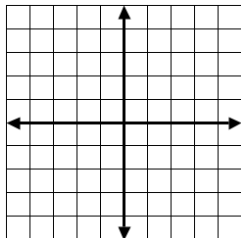
Find the volume of the solid generated by rotating the enclosed region about the given axis.

11.  $y = x^3$ ,  $y = \sqrt{x}$  about  $y = 1$



### 7.3.1

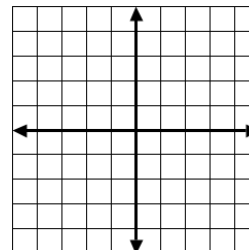
12.  $y = x^3$ ,  $y = \sqrt{x}$  about  $y = -3$



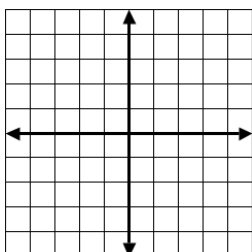
### 7.3.2 More Volumes

Find the volume of the solid formed by rotation the bounded region about the given axis.

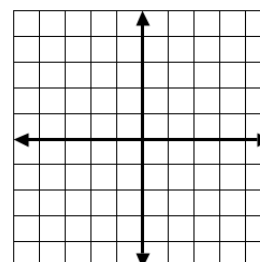
1.  $y = x^2$ ,  $x = 0$ ,  $y = 4$ , about  $x = 0$



2.  $y = 2x$ ,  $x = 0$ ,  $y = 6$ , about  $x = 0$

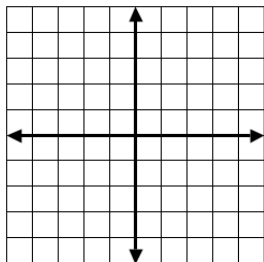


3.  $y = x^2$ ,  $x = 4$ ,  $y = 0$ , about  $x = 0$

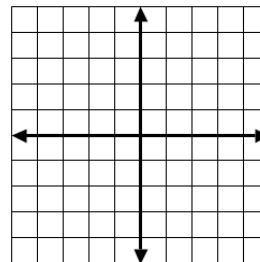


### 7.3.1

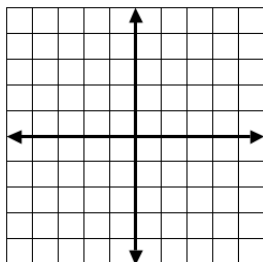
4.  $y = \sqrt{x}$ ,  $y = 0$ ,  $x = 4$ , about  $x = -2$



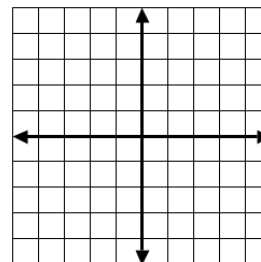
5.  $y = x^2$ ,  $y = 0$ ,  $x = 2$ , about  $y = -2$



6.  $y = x^2$ ,  $y = 0$ ,  $x = 2$ , about  $y = 4$

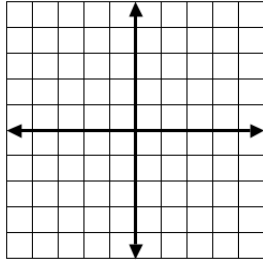


7.  $y = x^2$ ,  $y = 0$ ,  $x = 2$ , about  $x = -1$



7.3.1

8.  $y = x^3, y = \sqrt{x}$ , about  $y = 2$



9.  $y = x^3, y = \sqrt{x}$ , about  $x = 1$

