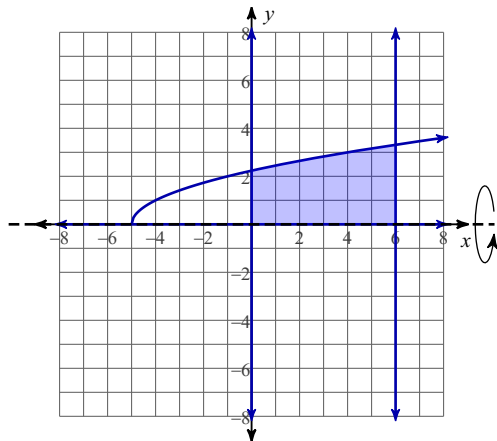


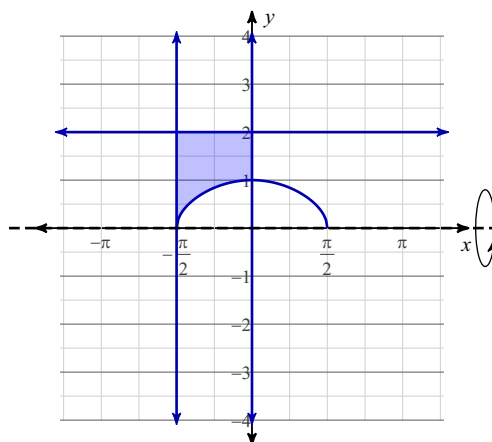
# Volume Review

For each problem, find the volume of the solid that results when the region enclosed by the curves is revolved about the  $x$ -axis.

1)  $y = \sqrt{x+5}$ ,  $y = 0$ ,  $x = 0$ ,  $x = 6$

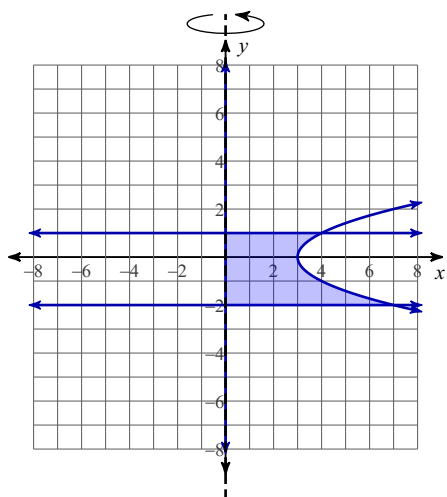


2)  $y = 2$ ,  $y = \sqrt{\cos x}$ ,  $x = -\frac{\pi}{2}$ ,  $x = 0$

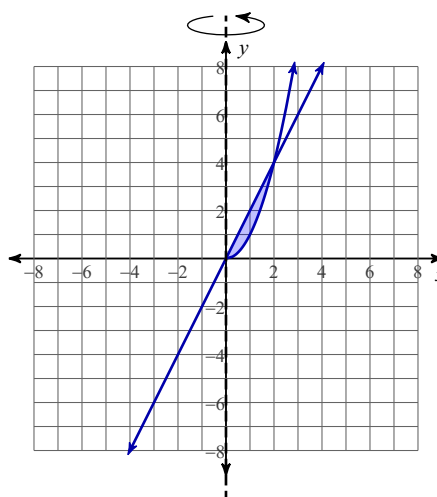


For each problem, find the volume of the solid that results when the region enclosed by the curves is revolved about the  $y$ -axis.

3)  $x = y^2 + 3$ ,  $x = 0$ ,  $y = -2$ ,  $y = 1$

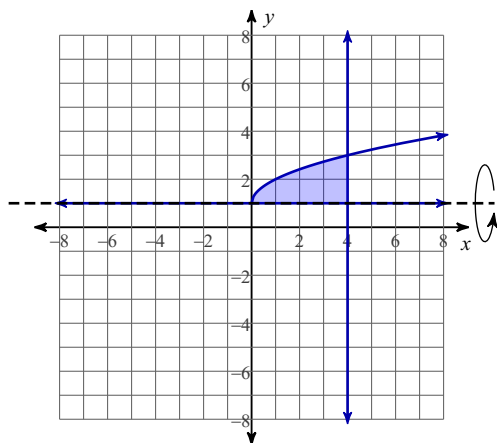


4)  $x = \sqrt{y}$ ,  $x = \frac{y}{2}$

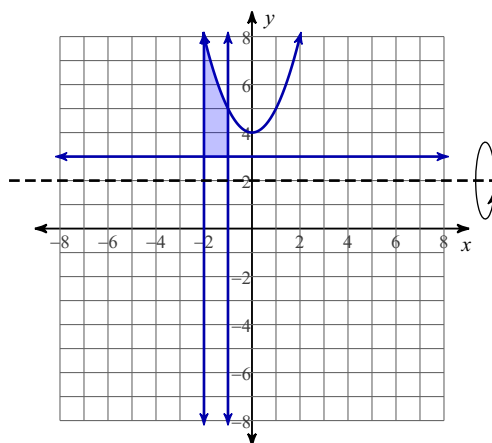


For each problem, find the volume of the solid that results when the region enclosed by the curves is revolved about the given axis.

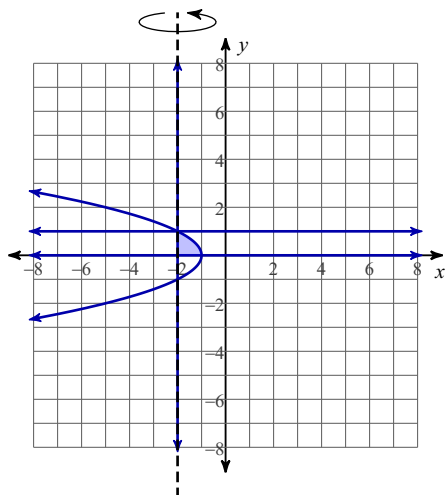
5)  $y = \sqrt{x} + 1$ ,  $y = 1$ ,  $x = 4$   
 Axis:  $y = 1$



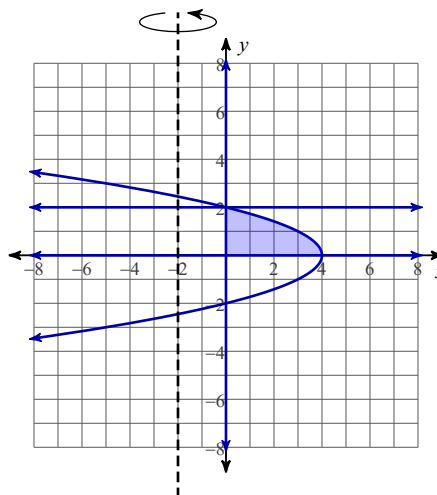
6)  $y = x^2 + 4$ ,  $y = 3$ ,  $x = -2$ ,  $x = -1$   
 Axis:  $y = 2$



7)  $x = -y^2 - 1$ ,  $x = -2$ ,  $y = 0$ ,  $y = 1$   
 Axis:  $x = -2$



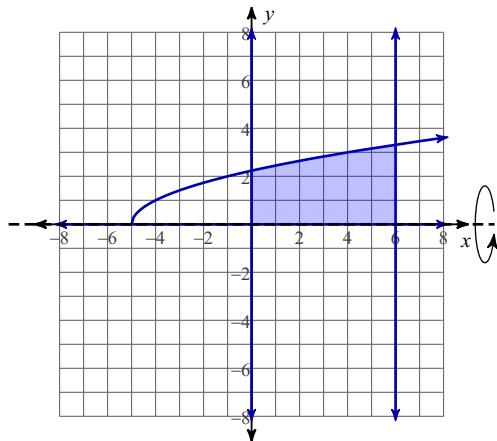
8)  $x = -y^2 + 4$ ,  $x = 0$ ,  $y = 0$ ,  $y = 2$   
 Axis:  $x = -2$



## Volume Review

For each problem, find the volume of the solid that results when the region enclosed by the curves is revolved about the  $x$ -axis.

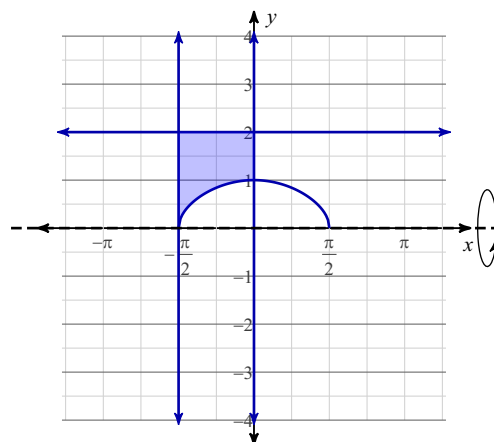
1)  $y = \sqrt{x+5}$ ,  $y = 0$ ,  $x = 0$ ,  $x = 6$



$$\pi \int_0^6 (\sqrt{x+5})^2 dx$$

$$= 48\pi \approx 150.796$$

2)  $y = 2$ ,  $y = \sqrt{\cos x}$ ,  $x = -\frac{\pi}{2}$ ,  $x = 0$

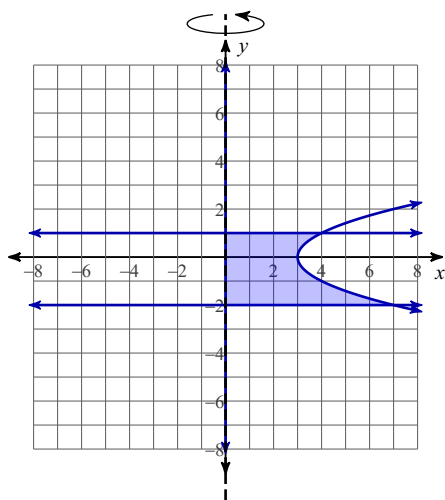


$$\pi \int_{-\frac{\pi}{2}}^0 (2^2 - (\sqrt{\cos x})^2) dx$$

$$= (2\pi - 1)\pi \approx 16.598$$

For each problem, find the volume of the solid that results when the region enclosed by the curves is revolved about the  $y$ -axis.

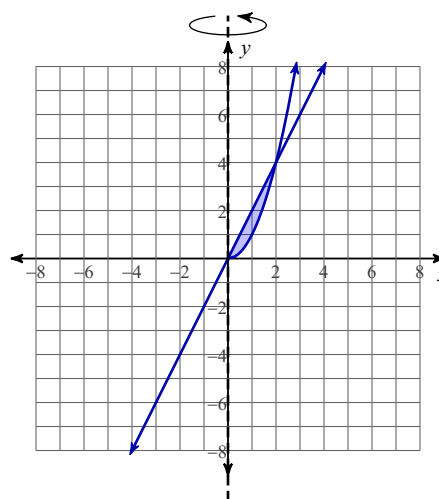
3)  $x = y^2 + 3$ ,  $x = 0$ ,  $y = -2$ ,  $y = 1$



$$\pi \int_{-2}^1 (y^2 + 3)^2 dy$$

$$= \frac{258}{5}\pi \approx 162.106$$

4)  $x = \sqrt{y}$ ,  $x = \frac{y}{2}$

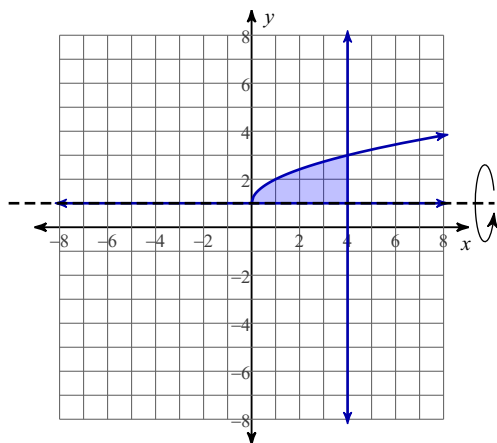


$$\pi \int_0^4 \left( (\sqrt{y})^2 - \left(\frac{y}{2}\right)^2 \right) dy$$

$$= \frac{8}{3}\pi \approx 8.378$$

For each problem, find the volume of the solid that results when the region enclosed by the curves is revolved about the given axis.

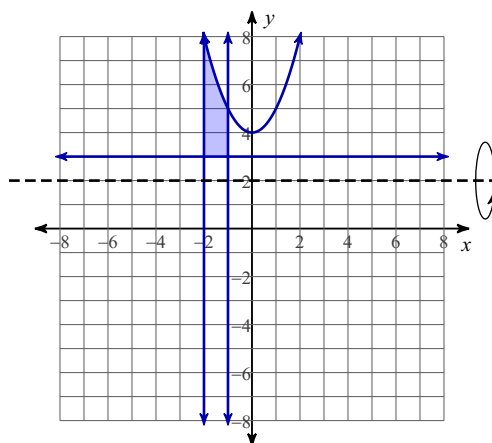
5)  $y = \sqrt{x} + 1$ ,  $y = 1$ ,  $x = 4$   
Axis:  $y = 1$



$$\pi \int_0^4 (\sqrt{x})^2 dx$$

$$= 8\pi \approx 25.133$$

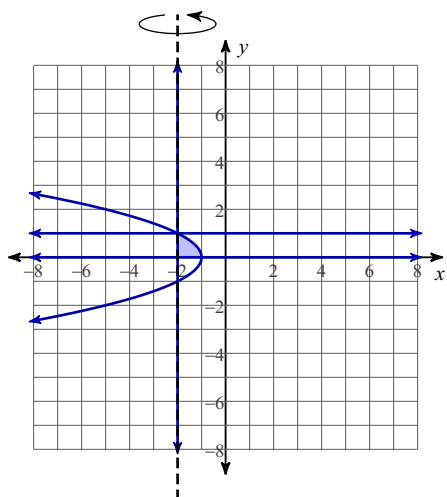
6)  $y = x^2 + 4$ ,  $y = 3$ ,  $x = -2$ ,  $x = -1$   
Axis:  $y = 2$



$$\pi \int_{-2}^{-1} ((x^2 + 2)^2 - 1) dx$$

$$= \frac{278}{15}\pi \approx 58.224$$

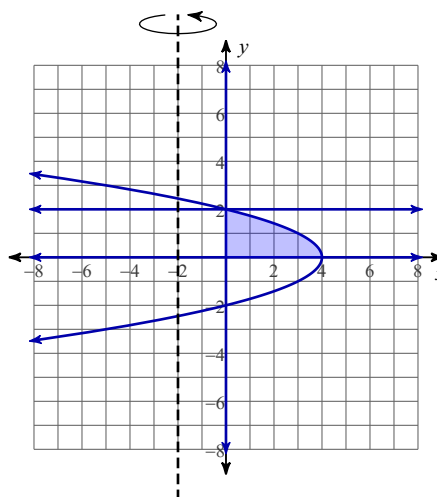
7)  $x = -y^2 - 1$ ,  $x = -2$ ,  $y = 0$ ,  $y = 1$   
Axis:  $x = -2$



$$\pi \int_0^1 (-y^2 + 1)^2 dy$$

$$= \frac{8}{15}\pi \approx 1.676$$

8)  $x = -y^2 + 4$ ,  $x = 0$ ,  $y = 0$ ,  $y = 2$   
Axis:  $x = -2$



$$\pi \int_0^2 ((-y^2 + 6)^2 - 2^2) dy$$

$$= \frac{192}{5}\pi \approx 120.637$$