

## Volumes of Revolution: Disk Method

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

1)  $y = -x^2 + 4$ ,  $y = 0$ ,  $x = 0$ ,  $x = 2$

2)  $x = 4$ ,  $x = y^2$ ,  $y = 0$ ,  $y = 2$

3)  $y = 2\sqrt{x+4}$ ,  $y = 0$ ,  $x = 2$ ,  $x = 6$

4)  $y = 2\sqrt{\sin x}$ ,  $y = 0$ ,  $x = 0$ ,  $x = \frac{\pi}{3}$

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

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

6)  $x = \sqrt{y+3}$ ,  $x = 0$ ,  $y = 3$ ,  $y = 6$

7)  $y = \sqrt{4-x}$ ,  $y = 0$ ,  $x = 0$

8)  $x = 2\sqrt{\cos y}$ ,  $x = 0$ ,  $y = -\frac{\pi}{4}$ ,  $y = \frac{\pi}{6}$

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

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

10)  $y = x^2 + 2$ ,  $y = 2$ ,  $x = 2$   
Axis:  $y = 2$

11)  $y = \sqrt{3-x}$ ,  $y = 0$ ,  $x = -1$   
Axis:  $x = -1$

12)  $x = \sqrt{y+2}$ ,  $x = 2$ ,  $y = 4$   
Axis:  $x = 2$