

## Volume Disc - NOT about Axes!

Date \_\_\_\_\_ Period \_\_\_\_\_

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.

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

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

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

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

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

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

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

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

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

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

## Answers to Volume Disc - NOT about Axes! (ID: 1)

$$\begin{aligned} 1) \pi \int_0^2 (x^2)^2 dx \\ = \frac{32}{5}\pi \approx 20.106 \end{aligned}$$

$$\begin{aligned} 2) \pi \int_0^1 (x^2)^2 dx \\ = \frac{1}{5}\pi \approx 0.628 \end{aligned}$$

$$\begin{aligned} 3) \pi \int_{-2}^2 (-x^2 + 4)^2 dx \\ = \frac{512}{15}\pi \approx 107.233 \end{aligned}$$

$$\begin{aligned} 4) \pi \int_{-1}^1 (-x^2 + 1)^2 dx \\ = \frac{16}{15}\pi \approx 3.351 \end{aligned}$$

$$\begin{aligned} 5) \pi \int_{-1}^2 (x^2 + 1)^2 dx \\ = \frac{78}{5}\pi \approx 49.009 \end{aligned}$$

$$\begin{aligned} 6) \pi \int_0^1 (-y^2 + 1)^2 dy \\ = \frac{8}{15}\pi \approx 1.676 \end{aligned}$$

$$\begin{aligned} 7) \pi \int_0^2 (y^2)^2 dy \\ = \frac{32}{5}\pi \approx 20.106 \end{aligned}$$

$$\begin{aligned} 8) \pi \int_{-1}^1 (-y^2 + 1)^2 dy \\ = \frac{16}{15}\pi \approx 3.351 \end{aligned}$$

$$\begin{aligned} 9) \pi \int_{-2}^2 (-y^2 + 4)^2 dy \\ = \frac{512}{15}\pi \approx 107.233 \end{aligned}$$

$$\begin{aligned} 10) \pi \int_0^1 (-y^2 + 1)^2 dy \\ = \frac{8}{15}\pi \approx 1.676 \end{aligned}$$