

Washer Method Practice!

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) $x = 5$, $x = \frac{2}{y}$, $y = 2$

Axis: $x = 0$

2) $y = x^2 - 2$, $y = 2x - 2$

Axis: $y = 2$

3) $x = 2$, $x = \sqrt{y - 3}$, $y = 3$

Axis: $y = 1$

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

Axis: $x = -1$

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

Axis: $y = -1$

6) $x = \sqrt{y} - 1$, $x = y^2 - 1$

Axis: $x = -2$

7) $y = 2$, $y = \sqrt{x - 3}$, $x = 3$

Axis: $x = 1$

8) $x = y^2 + 1$, $x = 1$, $y = 1$

Axis: $x = 0$

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

10) $y = 1$, $y = (x - 3)^2$, $x = 3$, $x = 4$
Axis: $x = 0$

Answers to Washer Method Practice! (ID: 1)

$$1) \pi \int_{\frac{2}{5}}^2 \left(5^2 - \left(\frac{2}{y} \right)^2 \right) dy$$

$$= 32\pi \approx 100.531$$

$$2) \pi \int_0^2 \left((4 - x^2)^2 - (4 - 2x)^2 \right) dx$$

$$= \frac{32}{5}\pi \approx 20.106$$

$$3) \pi \int_0^2 \left((x^2 + 2)^2 - 2^2 \right) dx$$

$$= \frac{256}{15}\pi \approx 53.617$$

$$4) \pi \int_{-1}^1 \left((-y^2 + 2)^2 - 1 \right) dy$$

$$= \frac{56}{15}\pi \approx 11.729$$

$$5) \pi \int_{-1}^1 \left((-x^2 + 2)^2 - 1 \right) dx$$

$$= \frac{56}{15}\pi \approx 11.729$$

$$6) \pi \int_0^1 \left((\sqrt{y} + 1)^2 - (y^2 + 1)^2 \right) dy$$

$$= \frac{29}{30}\pi \approx 3.037$$

$$7) \pi \int_0^2 \left((y^2 + 2)^2 - 2^2 \right) dy$$

$$= \frac{256}{15}\pi \approx 53.617$$

$$8) \pi \int_0^1 \left((y^2 + 1)^2 - 1 \right) dy$$

$$= \frac{13}{15}\pi \approx 2.723$$

$$9) \pi \int_{-2}^2 \left((-y^2 + 6)^2 - 2^2 \right) dy$$

$$= \frac{384}{5}\pi \approx 241.274$$

$$10) \pi \int_0^1 \left((\sqrt{y} + 3)^2 - 3^2 \right) dy$$

$$= \frac{9}{2}\pi \approx 14.137$$