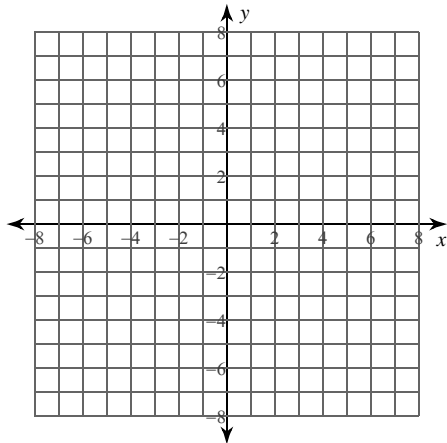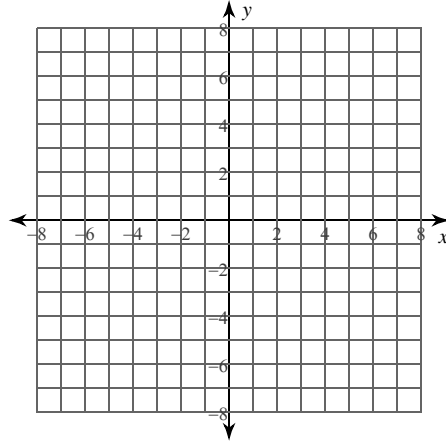Name_____

Calculus Practice: Using Definite Integrals to Calculate Volume 1b

For each problem, find the volume of the solid that results when the region enclosed by the curves is revolved about the *x*-axis. You may use the provided graph to sketch the curves and shade the enclosed region.
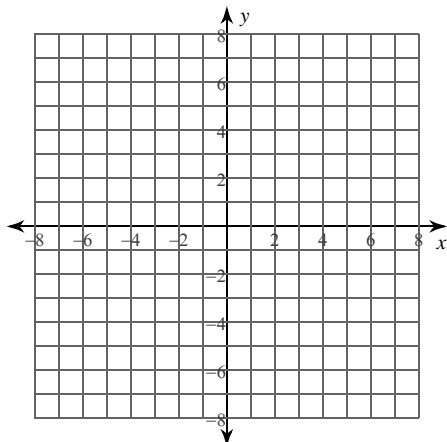
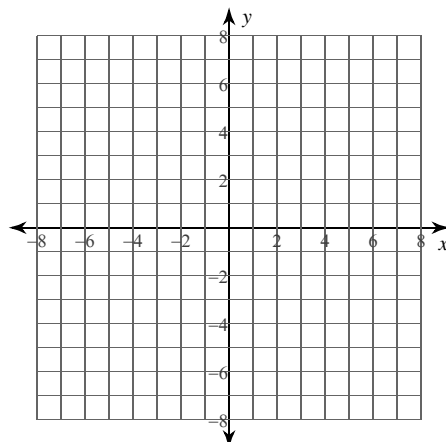1) $y = \dfrac{1}{x}, \ y = 0, \ x = \dfrac{1}{3}, \ x = 2$
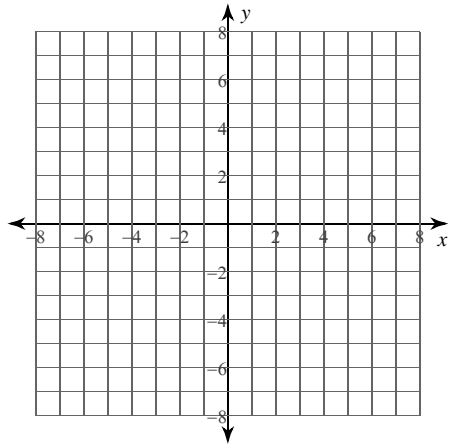

2) $y = \sqrt[3]{x}, \ y = 0, \ x = 1$
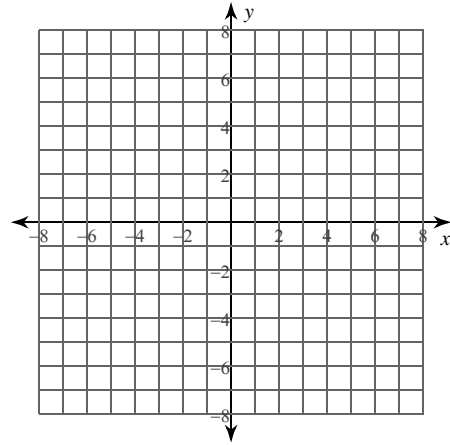

3) $y = \sqrt{x + 6}, \ y = 0, \ x = -1, \ x = 4$
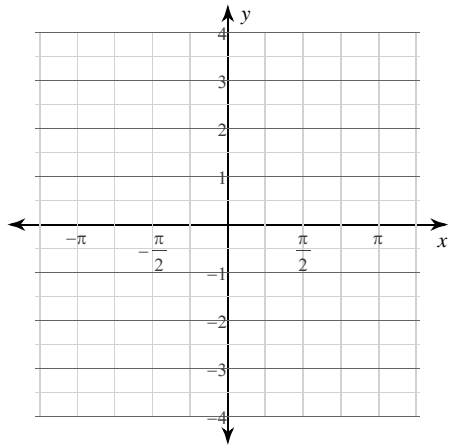

4) $y = -x^2 + 1, \ y = 0, \ x = -1, \ x = 0$

5) $y = x^2 + 3$, $y = 0$, $x = -2$, $x = 0$
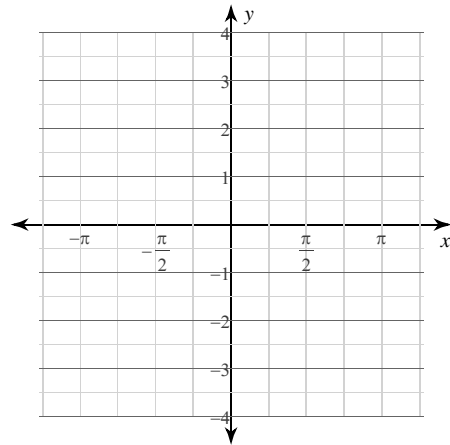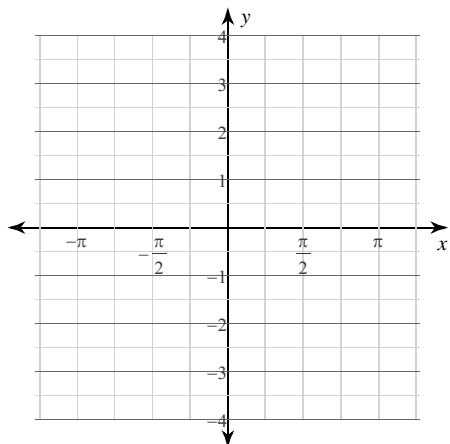
6) $y = \sqrt{x}$, $y = 0$, $x = 1$

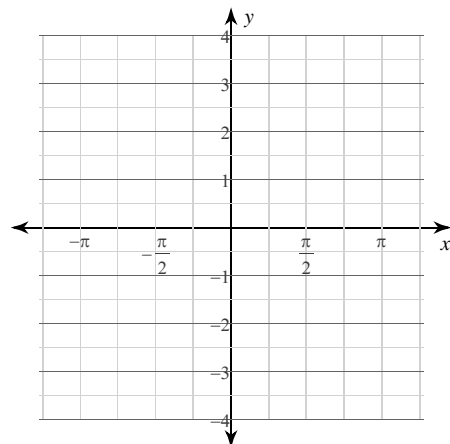7) $y = 2\sqrt{\cos x}$, $y = 0$, $x = -\dfrac{\pi}{2}$, $x = \dfrac{\pi}{2}$

8) $y = \csc x$, $y = 0$, $x = \dfrac{\pi}{6}$, $x = \dfrac{\pi}{4}$

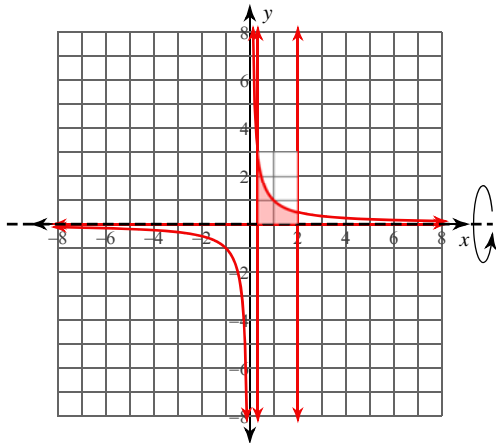9) $y = 2\sqrt{\sin x}$, $y = 0$, $x = 0$, $x = \dfrac{\pi}{2}$

10) $y = \sec x$, $y = 0$, $x = 0$, $x = \dfrac{\pi}{6}$

Name_____

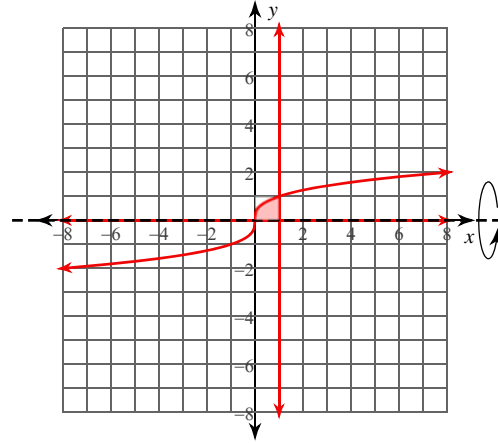# Calculus Practice: Using Definite Integrals to Calculate Volume 1b

For each problem, find the volume of the solid that results when the region enclosed by the curves is revolved about the *x*-axis. You may use the provided graph to sketch the curves and shade the enclosed region.

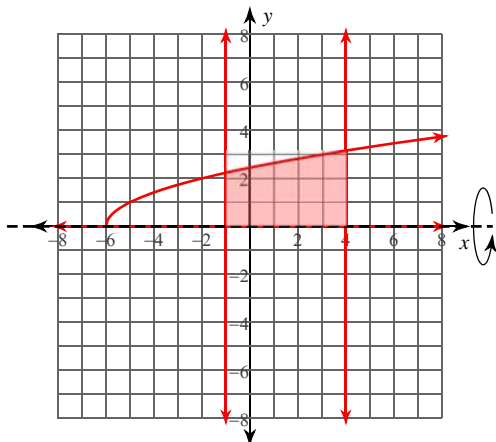1) $y = \dfrac{1}{x}, \ y = 0, \ x = \dfrac{1}{3}, \ x = 2$

$\dfrac{5}{2}\pi \approx 7.854$
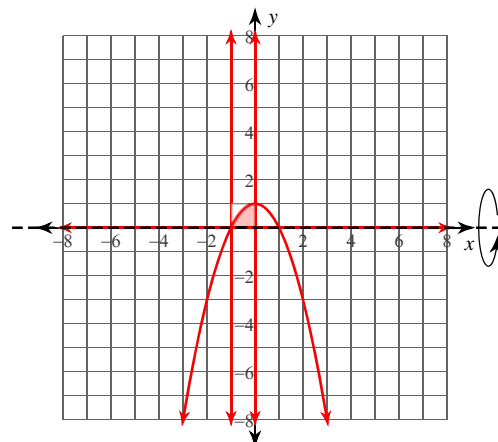
2) $y = \sqrt[3]{x}, \ y = 0, \ x = 1$

$\dfrac{3}{5}\pi \approx 1.885$

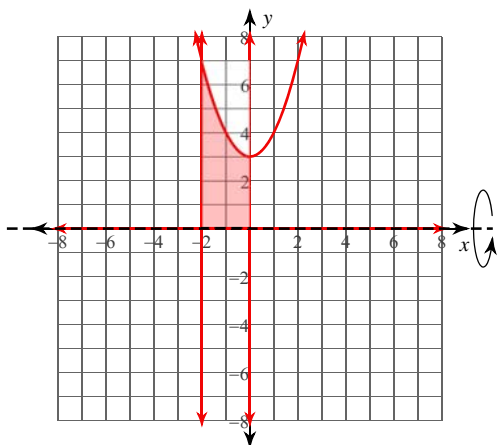3) $y = \sqrt{x + 6}, \ y = 0, \ x = -1, \ x = 4$

$\dfrac{75}{2}\pi \approx 117.81$

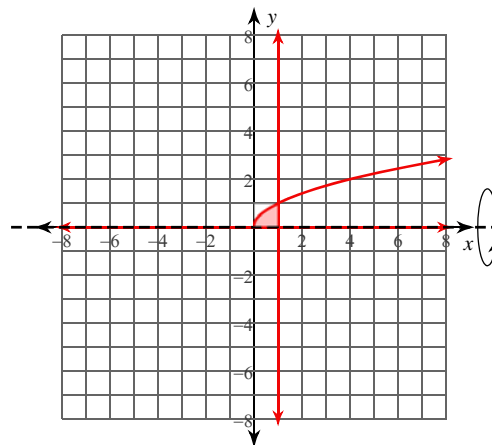4) $y = -x^2 + 1, \ y = 0, \ x = -1, \ x = 0$

$\dfrac{8}{15}\pi \approx 1.676$

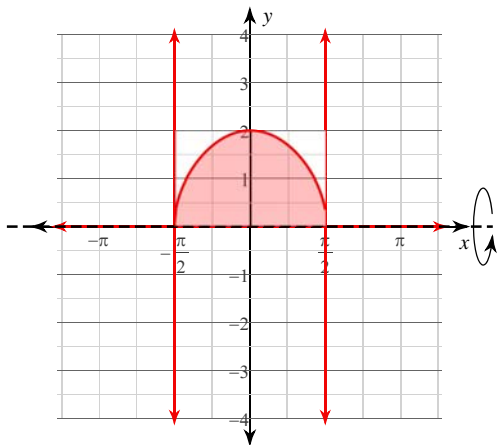5) $y = x^2 + 3$, $y = 0$, $x = -2$, $x = 0$

$$\frac{202}{5}\pi \approx 126.92$$
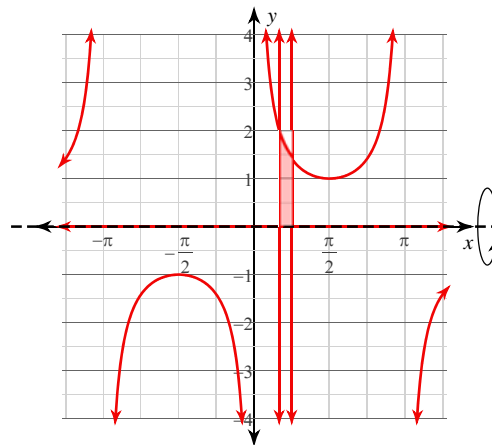
6) $y = \sqrt{x}$, $y = 0$, $x = 1$

$$\frac{1}{2}\pi \approx 1.571$$

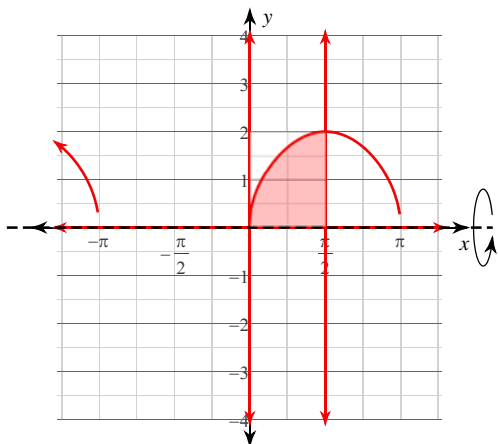7) $y = 2\sqrt{\cos x}$, $y = 0$, $x = -\frac{\pi}{2}$, $x = \frac{\pi}{2}$

$$8\pi \approx 25.133$$
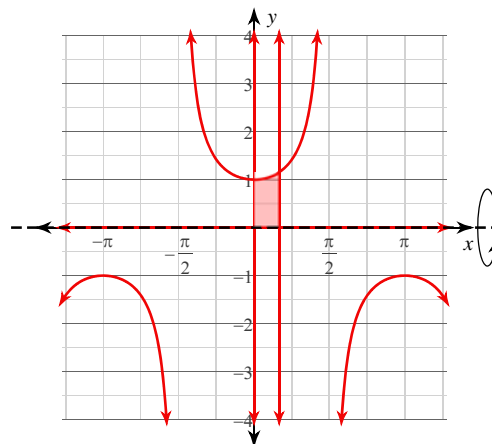
8) $y = \csc x$, $y = 0$, $x = \frac{\pi}{6}$, $x = \frac{\pi}{4}$

$$\left(-1 + \sqrt{3}\right)\pi \approx 2.3$$

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

$$4\pi \approx 12.566$$

10) $y = \sec x$, $y = 0$, $x = 0$, $x = \frac{\pi}{6}$

$$\frac{\sqrt{3}}{3}\pi \approx 1.814$$

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