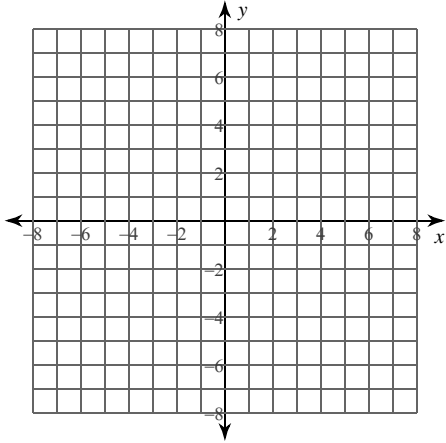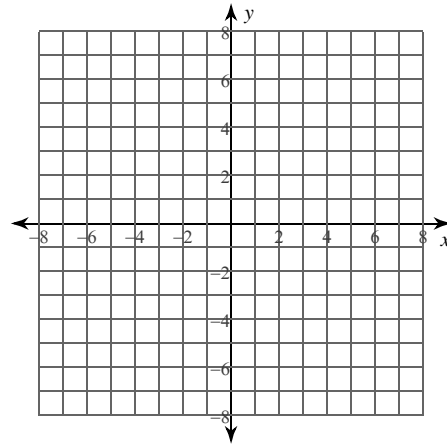Name_____

Calculus Practice: Using Definite Integrals to Calculate Volume 2b

For each problem, find the volume of the solid that results when the region enclosed by the curves is revolved about the *y*-axis. You may use the provided graph to sketch the curves and shade the enclosed region.
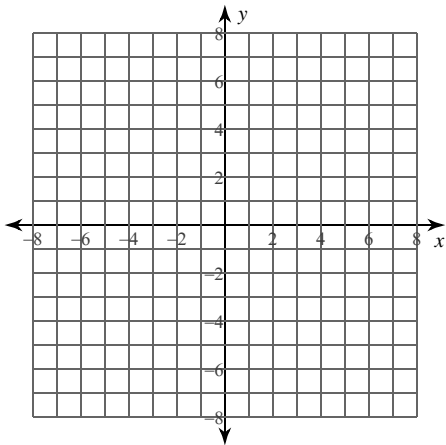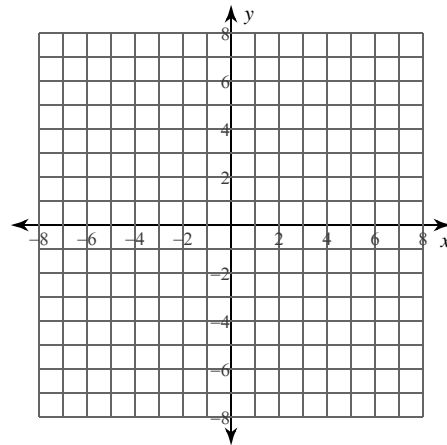
1) $x = \sqrt{y}$, $x = 0$, $y = 4$
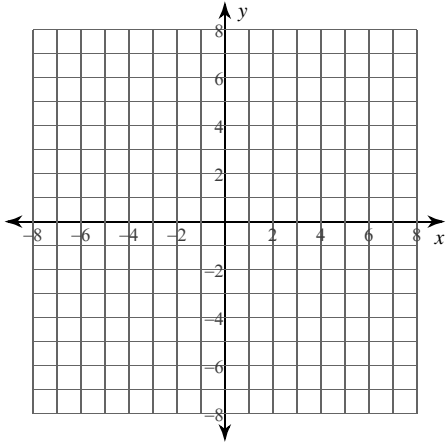

2) $x = \dfrac{2}{y}$, $x = 0$, $y = 1$, $y = 3$
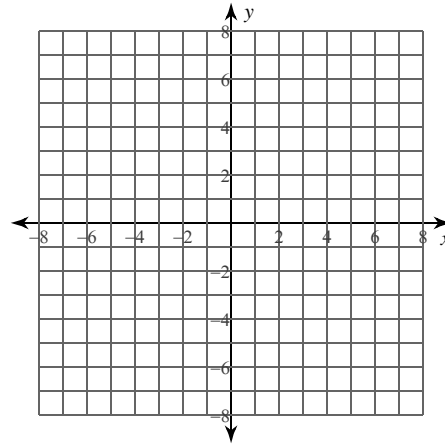

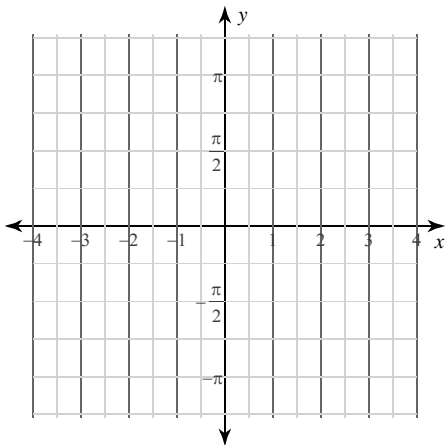3) $x = -y^2 + 1$, $x = 0$, $y = 0$, $y = 1$

4) $x = y^3$, $x = 0$, $y = 1$

-1-

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

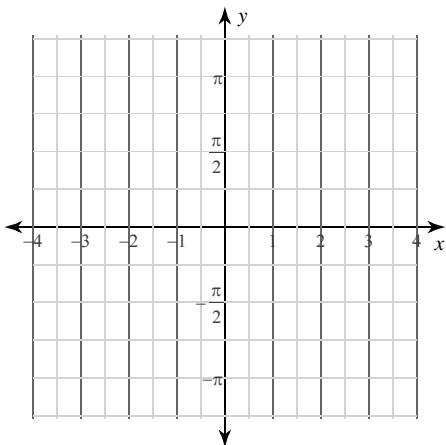6) $x = -y^2 + 4, \; x = 0, \; y = -2, \; y = 0$

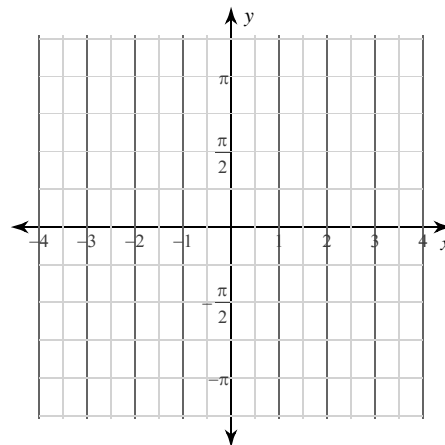7) $x = \csc y, \; x = 0, \; y = \dfrac{\pi}{6}, \; y = \dfrac{\pi}{3}$

8) $x = 2\sqrt{\cos y}, \; x = 0, \; y = -\dfrac{\pi}{2}, \; y = \dfrac{\pi}{4}$
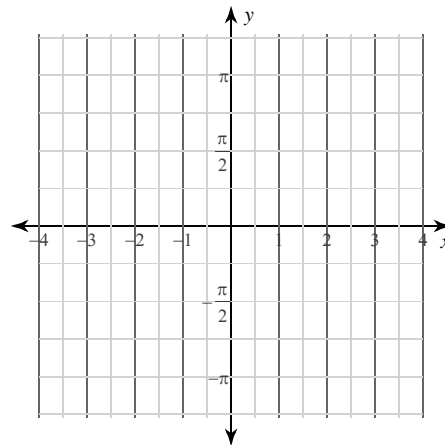
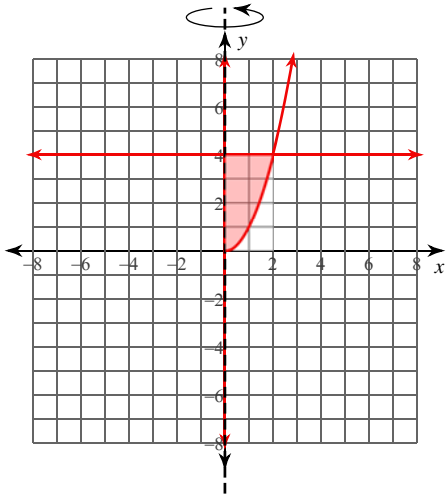9) $x = \sec y, \; x = 0, \; y = 0, \; y = \dfrac{\pi}{6}$

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

-2-

Name_____

Calculus Practice: Using Definite Integrals to Calculate Volume 2b
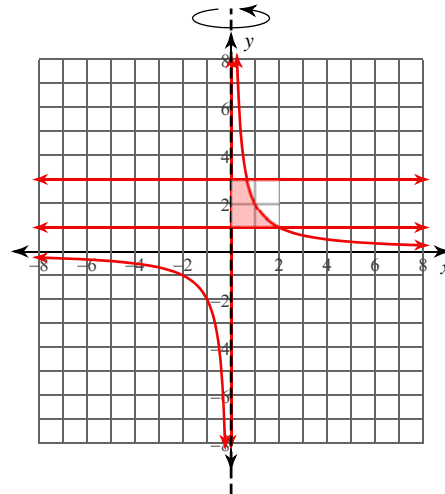
For each problem, find the volume of the solid that results when the region enclosed by the curves is revolved about the *y*-axis. You may use the provided graph to sketch the curves and shade the enclosed region.
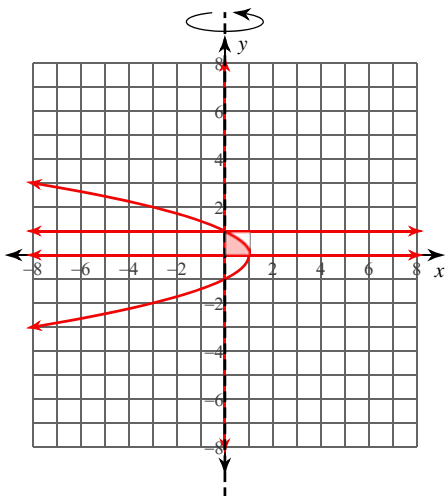
1) $x = \sqrt{y}, \ x = 0, \ y = 4$

$8\pi \approx 25.133$
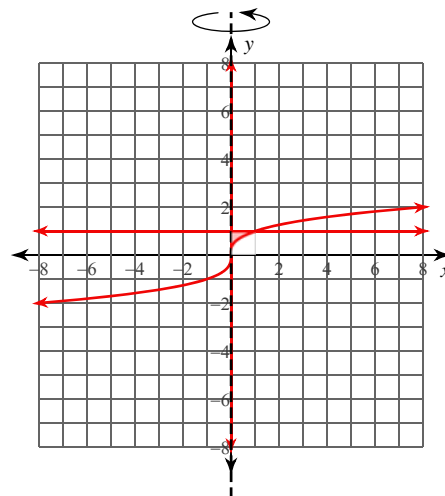
2) $x = \dfrac{2}{y}, \ x = 0, \ y = 1, \ y = 3$

$\dfrac{8}{3}\pi \approx 8.378$

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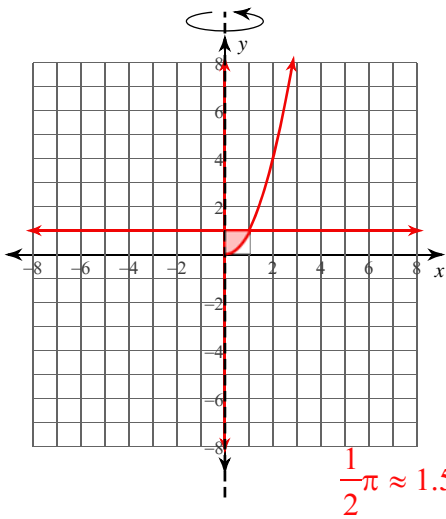

$\dfrac{8}{15}\pi \approx 1.676$

4) $x = y^3, \ x = 0, \ y = 1$
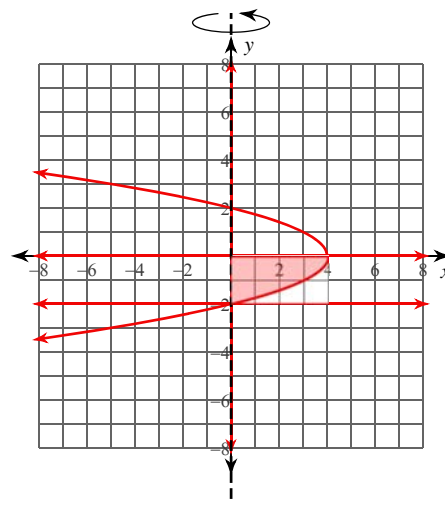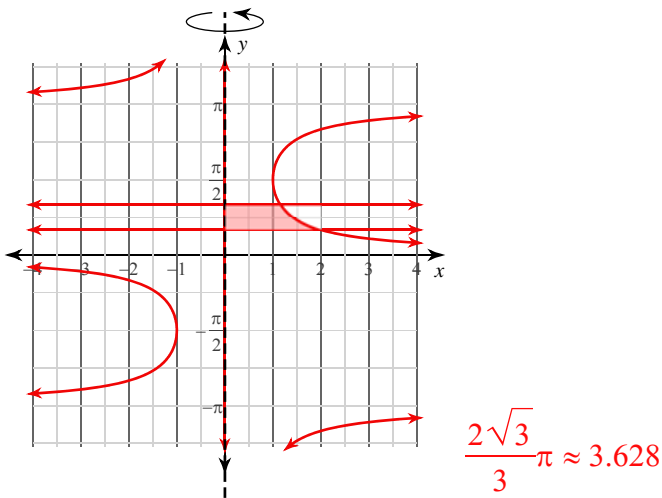

$\dfrac{1}{7}\pi \approx 0.449$

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

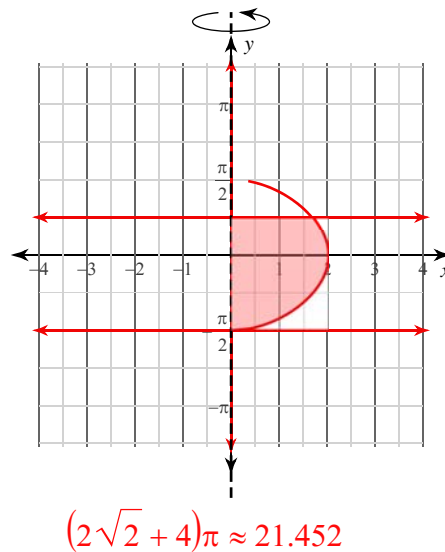$\dfrac{1}{2}\pi \approx 1.571$

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

$\dfrac{256}{15}\pi \approx 53.617$

7) $x = \csc y, \ x = 0, \ y = \dfrac{\pi}{6}, \ y = \dfrac{\pi}{3}$

$\dfrac{2\sqrt{3}}{3}\pi \approx 3.628$

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

$\left(2\sqrt{2} + 4\right)\pi \approx 21.452$

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

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

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

$2\sqrt{2} \cdot \pi \approx 8.886$

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