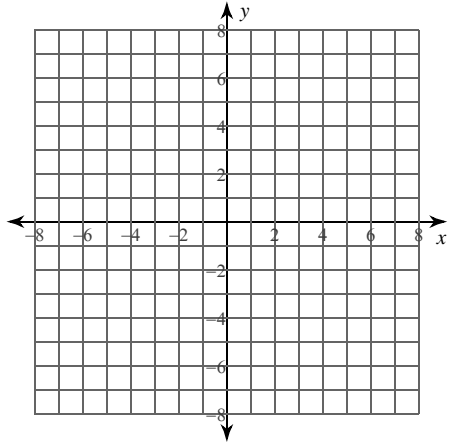Name_____

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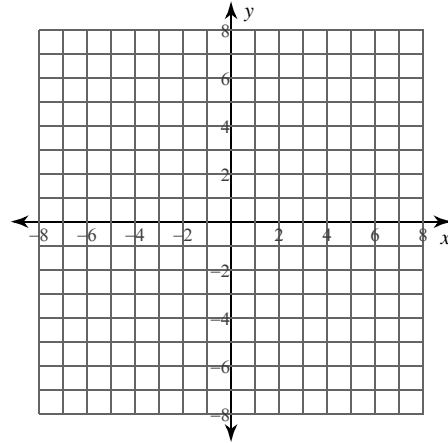
For each problem, find the volume of the solid that results when the region enclosed by the curves is revolved about the *x*-axis. You may use the provided graph to sketch the curves and shade the enclosed region.
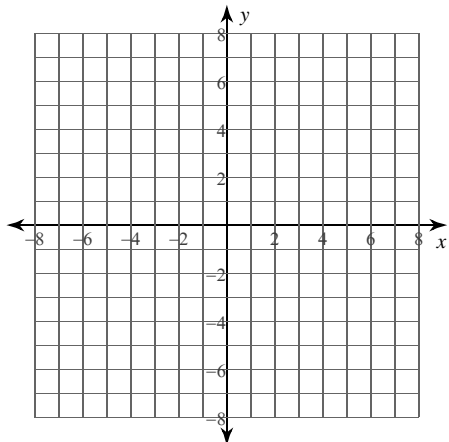
1) $y = x^2$, $y = 0$, $x = 1$

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

B) $\dfrac{11}{5}\pi \approx 6.912$

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

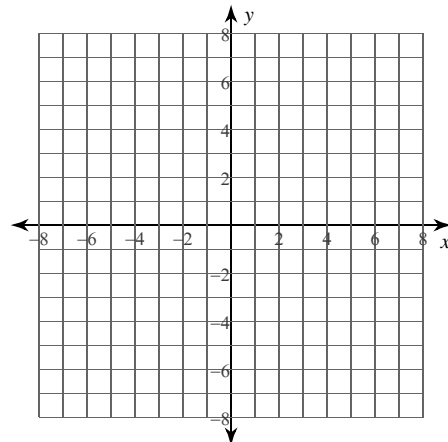D) $\dfrac{1}{5}\pi \approx 0.628$

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

A) $\dfrac{512}{15}\pi \approx 107.233$

B) $\dfrac{542}{15}\pi \approx 113.516$

C) $\dfrac{1009}{30}\pi \approx 105.662$

D) $\dfrac{1024}{15}\pi \approx 214.466$

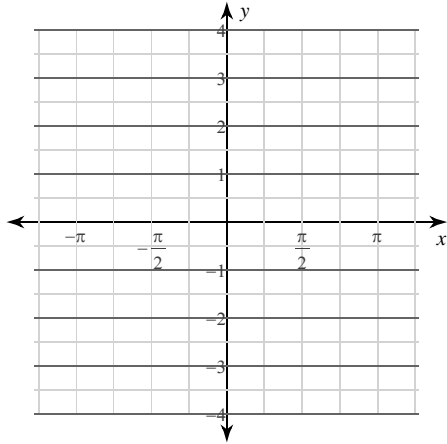3) $y = 2\sqrt{x + 6}$, $y = 0$, $x = -4$, $x = 2$

A) $\dfrac{359}{3}\pi \approx 375.944$

B) $\dfrac{361}{3}\pi \approx 378.038$

C) $\dfrac{239}{2}\pi \approx 375.42$

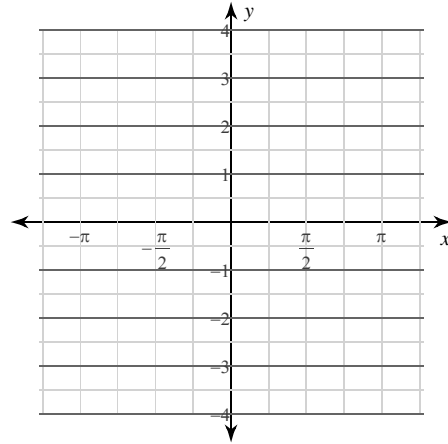D) $120\pi \approx 376.991$

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

A) $\dfrac{8}{5}\pi \approx 5.027$

B) $\dfrac{2}{5}\pi \approx 1.257$

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

D) $\dfrac{9}{5}\pi \approx 5.655$

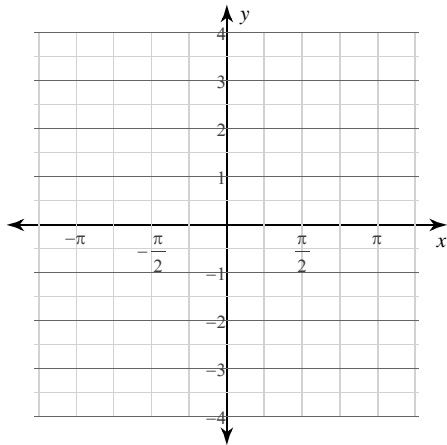5) $y = \csc x$, $y = 0$, $x = \dfrac{\pi}{2}$, $x = \dfrac{5\pi}{6}$

A) $\left(\sqrt{3} - 1\right)\pi \approx 2.3$
B) $\left(\sqrt{3} + 1\right)\pi \approx 8.583$
C) $\sqrt{3} \cdot \pi \approx 5.441$
D) $3\pi \approx 9.425$

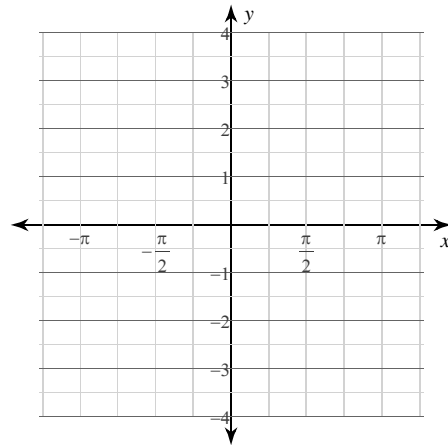6) $y = 2\sqrt{\cos x}$, $y = 0$, $x = \dfrac{\pi}{4}$, $x = \dfrac{\pi}{2}$

A) $\left(4 - 2\sqrt{2}\right)\pi \approx 3.681$
B) $\left(5 - 2\sqrt{2}\right)\pi \approx 6.822$
C) $\dfrac{5}{2}\pi \approx 7.854$
D) $\left(3 - 2\sqrt{2}\right)\pi \approx 0.539$

7) $y = 2\sec x$, $y = 0$, $x = \dfrac{\pi}{6}$, $x = \dfrac{\pi}{3}$

A) $\dfrac{8\sqrt{3}}{3}\pi \approx 14.51$

B) $\dfrac{16\sqrt{3}}{3}\pi \approx 29.021$

C) $\dfrac{4\sqrt{3}}{3}\pi \approx 7.255$

D) $8\sqrt{3} \cdot \pi \approx 43.531$

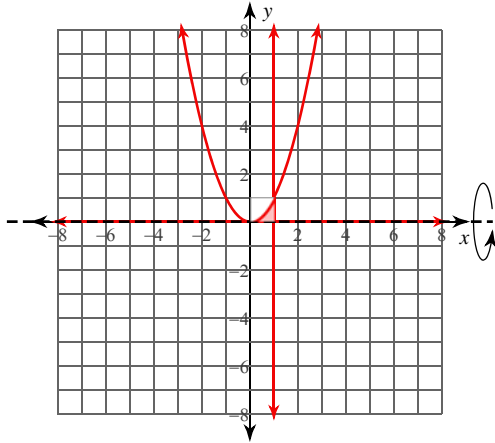8) $y = \sqrt{\sin x}$, $y = 0$, $x = 0$, $x = \dfrac{\pi}{2}$

A) $\dfrac{3}{4}\pi \approx 2.356$

B) $\pi \approx 3.142$
C) $2\pi \approx 6.283$
D) $\left(-2 + 2\sqrt{2}\right)\pi \approx 2.603$

-2-

Name_____

Calculus Practice: Using Definite Integrals to Calculate Volume 1a
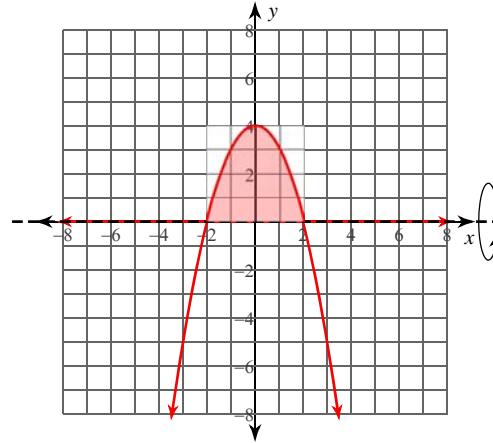
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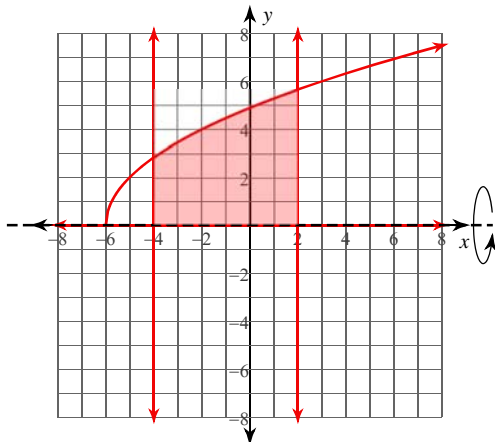
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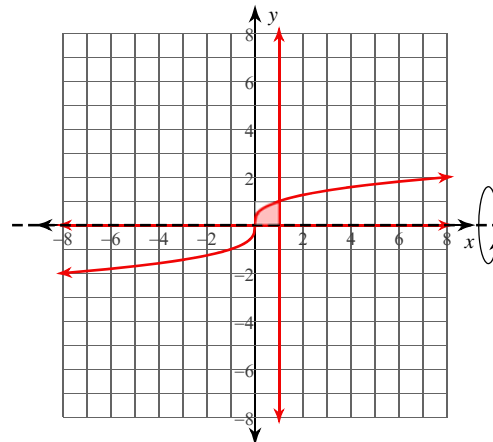*D) $\dfrac{1}{5}\pi \approx 0.628$

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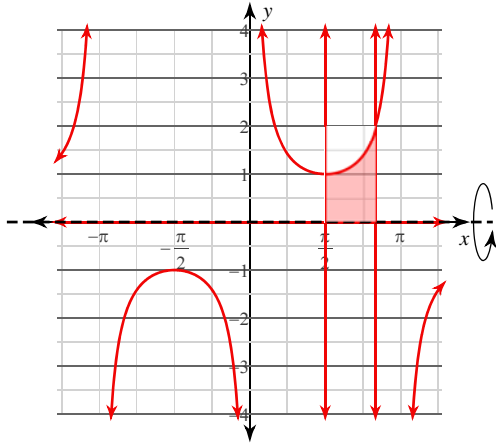3) $y = 2\sqrt{x + 6}$, $y = 0$, $x = -4$, $x = 2$

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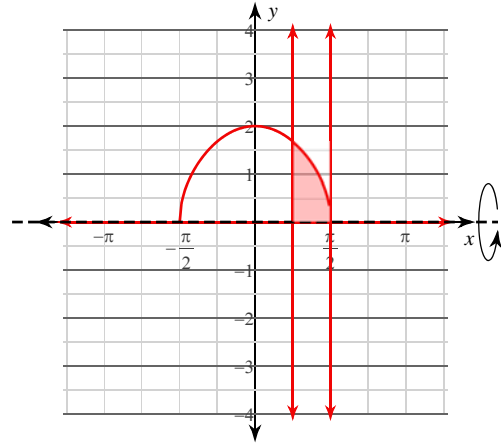*D) $120\pi \approx 376.991$

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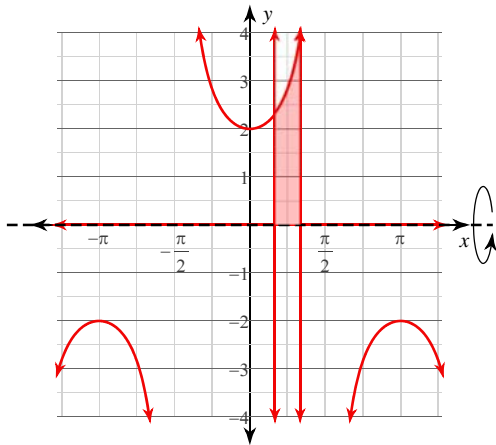5) $y = \csc x$, $y = 0$, $x = \dfrac{\pi}{2}$, $x = \dfrac{5\pi}{6}$

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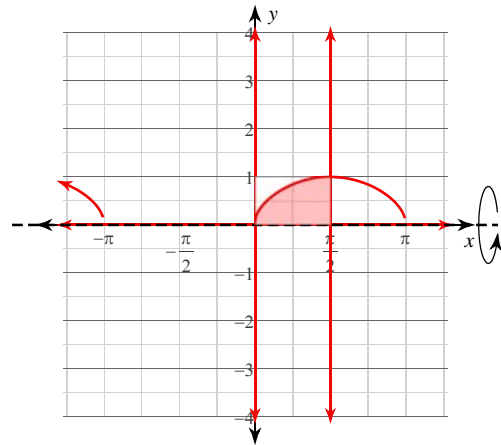6) $y = 2\sqrt{\cos x}$, $y = 0$, $x = \dfrac{\pi}{4}$, $x = \dfrac{\pi}{2}$

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