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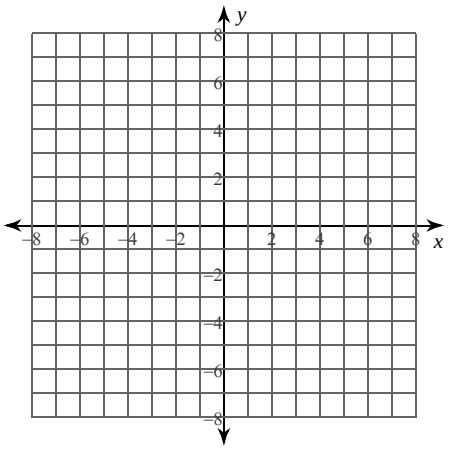
Calculus Practice: Using Definite Integrals to Calculate Volume 6a

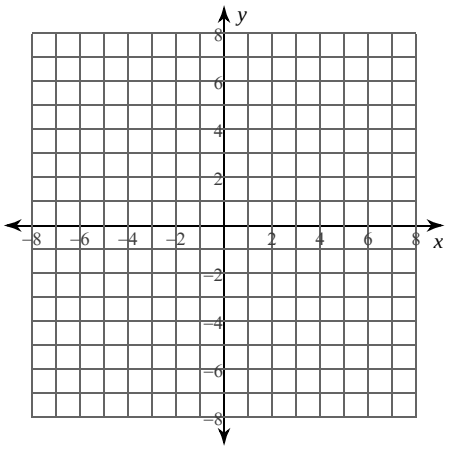
For each problem, find the volume of the solid that results when the region enclosed by the curves is revolved about the *y*-axis. You may use the provided graph to sketch the curves and shade the enclosed region.

1) $x = \sqrt{y} + 2,\ x = \frac{y}{2} + 2$



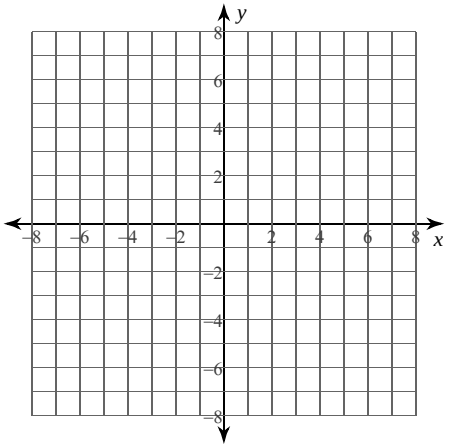
A) $16\pi \approx 50.265$
B) $8\pi \approx 25.133$
C) $6\pi \approx 18.85$
D) $24\pi \approx 75.398$

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



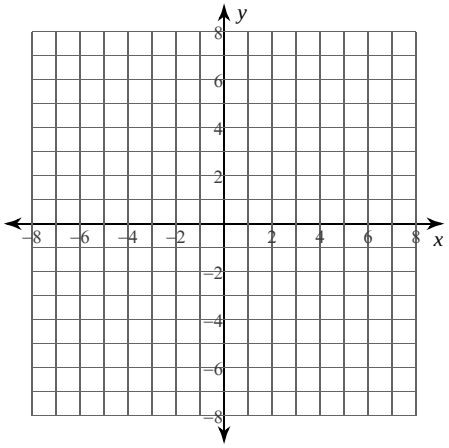
A) $\frac{2}{3}\pi \approx 2.094$
B) $8\pi \approx 25.133$
C) $\frac{8}{3}\pi \approx 8.378$
D) $3\pi \approx 9.425$

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



A) $\frac{11}{21}\pi \approx 1.646$
B) $\frac{13}{7}\pi \approx 5.834$
C) $\frac{6}{7}\pi \approx 2.693$
D) $\frac{5}{14}\pi \approx 1.122$

4) $x = \sqrt{y} + 2,\ x = y^2 + 2$



A) $\frac{79}{30}\pi \approx 8.273$
B) $\frac{49}{30}\pi \approx 5.131$
C) $\frac{11}{30}\pi \approx 1.152$
D) $\frac{49}{15}\pi \approx 10.263$

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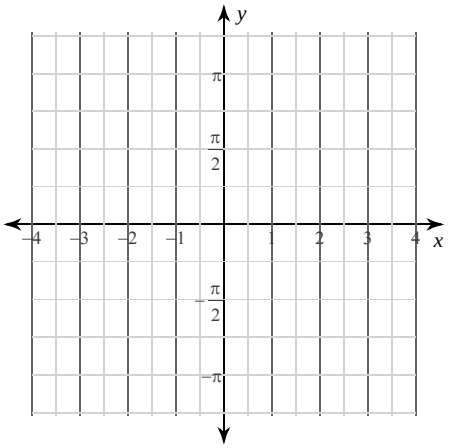
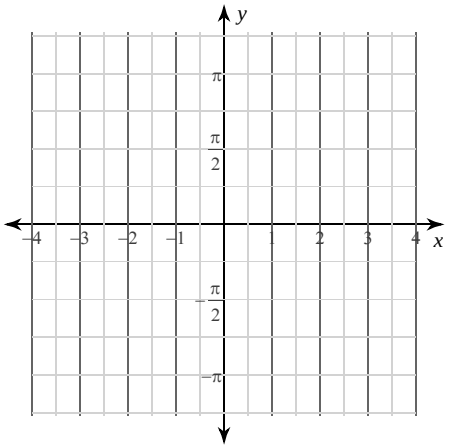
5) $x = 2,\ x = \sqrt{\cos y},\ y = 0,\ y = \dfrac{\pi}{2}$



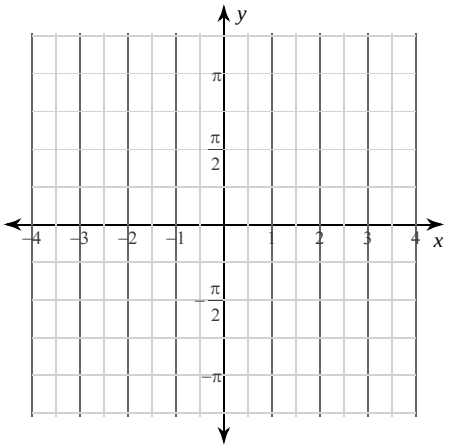
A) $2\pi\pi \approx 19.739$
B) $\left(2\pi - 5 + 3\sqrt{2}\right)\pi \approx 17.36$
C) $\left(2\pi - 4 + 2\sqrt{3}\right)\pi \approx 18.056$
D) $\left(2\pi - 1\right)\pi \approx 16.598$

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



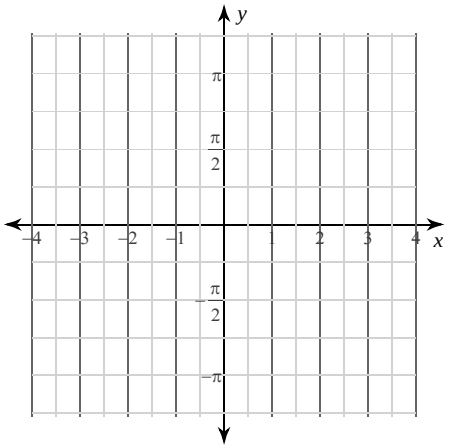
A) $3\pi \approx 9.425$
B) $\left(3\sqrt{3} - 1\right)\pi \approx 13.183$
C) $\left(3\sqrt{3} + 1\right)\pi \approx 19.466$
D) $3\sqrt{3} \cdot \pi \approx 16.324$

7) $x = 2\csc y,\ x = \csc y,\ y = \dfrac{\pi}{4},\ y = \dfrac{\pi}{3}$



A) $\left(4 - \sqrt{3}\right)\pi \approx 7.125$
B) $\left(2 - \sqrt{3}\right)\pi \approx 0.842$
C) $\left(3 - \sqrt{3}\right)\pi \approx 3.983$
D) $\dfrac{5}{2}\pi \approx 7.854$

8) $x = 2\csc y,\ x = \csc y,\ y = \dfrac{\pi}{2},\ y = \dfrac{3\pi}{4}$



A) $\dfrac{5}{2}\pi \approx 7.854$
B) $2\pi \approx 6.283$
C) $\dfrac{11}{4}\pi \approx 8.639$
D) $3\pi \approx 9.425$

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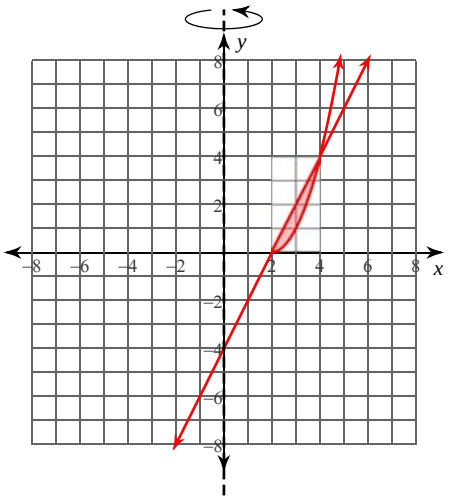

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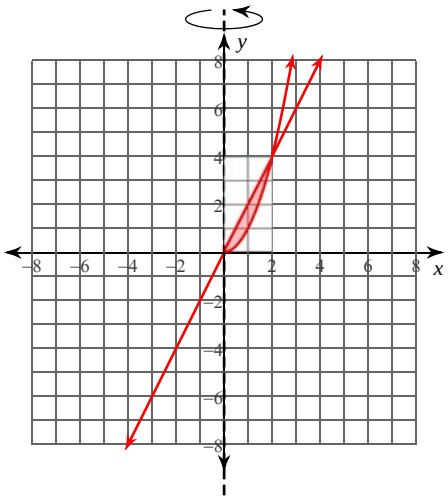

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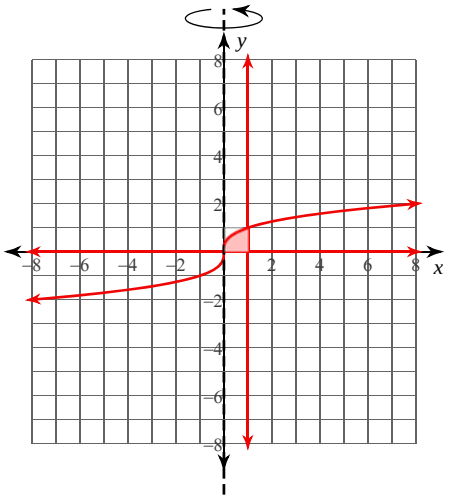

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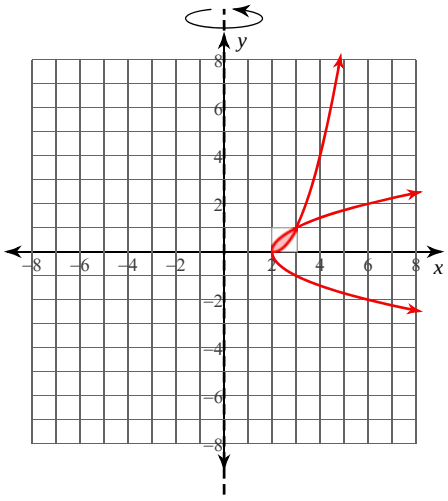

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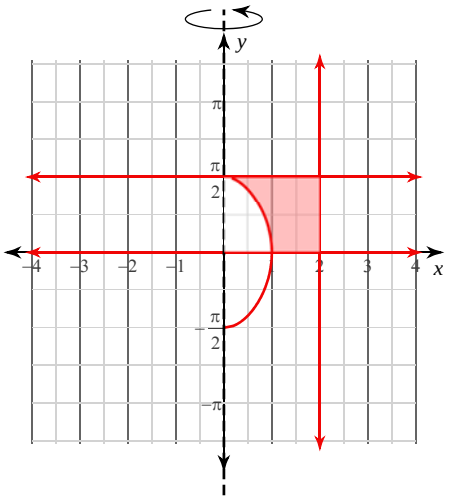

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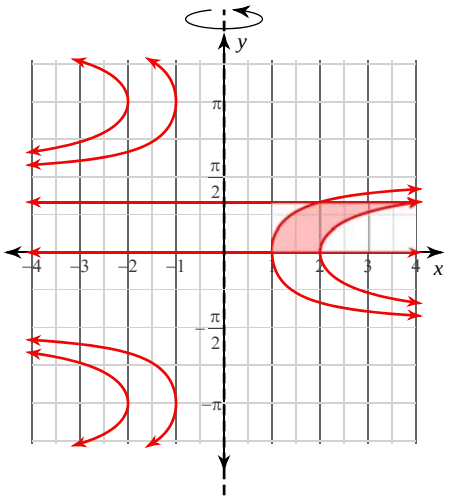

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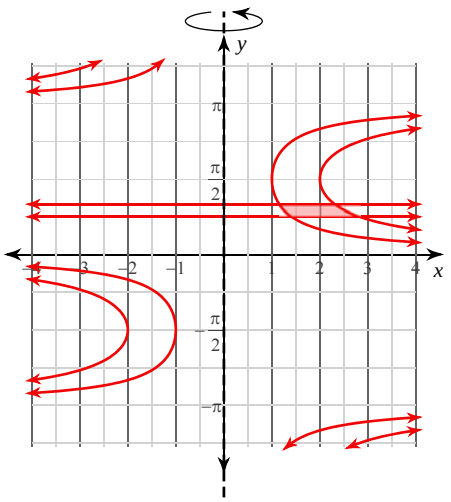

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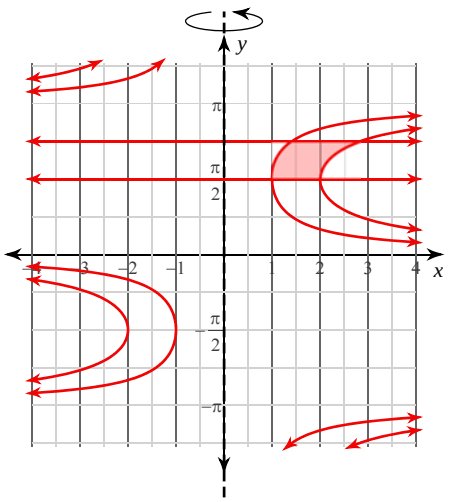

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