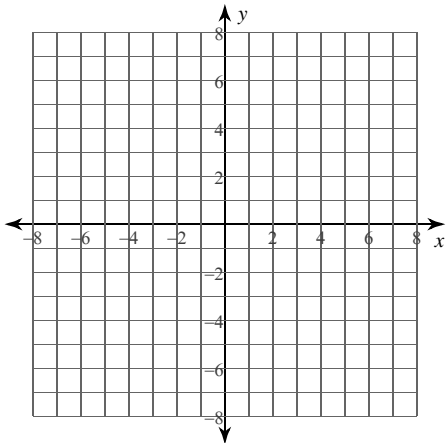Name_____

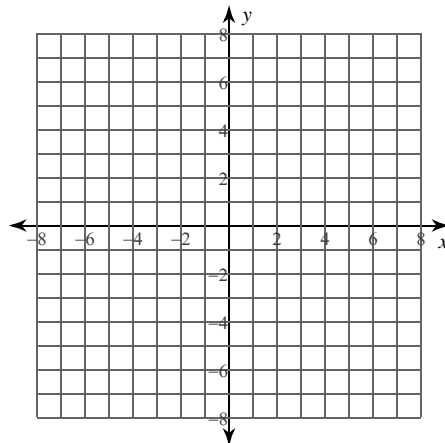# Calculus Practice: Using Definite Integrals to Calculate Volume 4a

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

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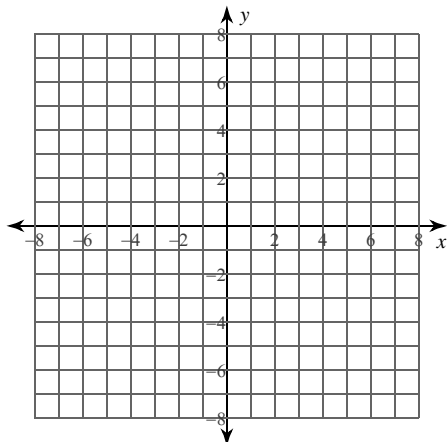   Axis: $x = 0$



A) $\dfrac{9}{5}\pi \approx 5.655$      B) $\dfrac{2}{5}\pi \approx 1.257$

C) $\dfrac{1}{5}\pi \approx 0.628$      D) $\dfrac{3}{5}\pi \approx 1.885$

2) $y = (x - 1)^2$, $y = 1$, $x = 1$, $x = 2$
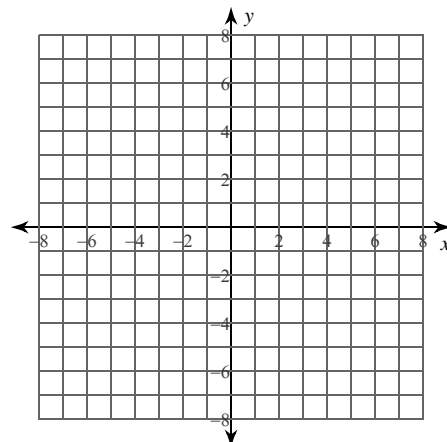   Axis: $x = 1$



A) $\pi \approx 3.142$      B) $\dfrac{1}{2}\pi \approx 1.571$

C) $\dfrac{1}{6}\pi \approx 0.524$      D) $\dfrac{5}{2}\pi \approx 7.854$

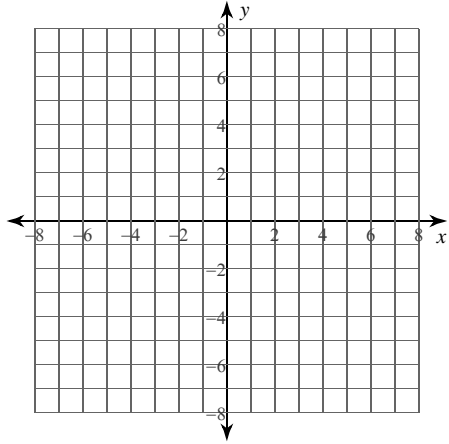3) $x = 1$, $x = \sqrt{y}$, $y = 0$
   Axis: $y = 0$



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

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

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

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

4) $x = 1$, $x = (y + 2)^2$, $y = -2$, $y = -1$
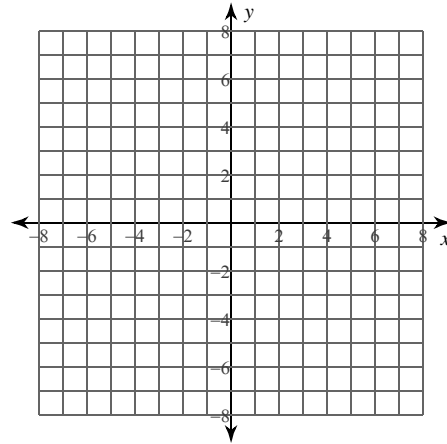   Axis: $y = -2$



A) $\dfrac{1}{6}\pi \approx 0.524$      B) $\dfrac{3}{2}\pi \approx 4.712$

C) $\dfrac{1}{2}\pi \approx 1.571$      D) $\pi \approx 3.142$

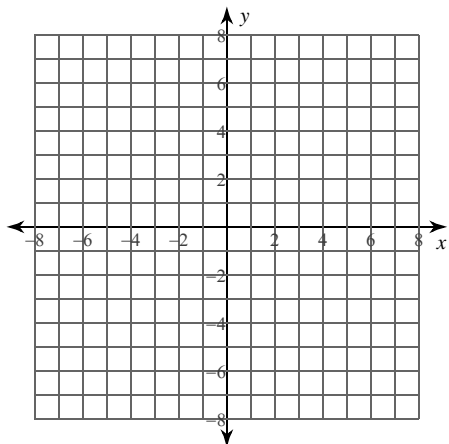5) $x = -\sqrt{3-y}$, $x = \sqrt{3-y}$, $y = 2$
  Axis: $y = 2$



A) $\dfrac{47}{30}\pi \approx 4.922$

B) $\dfrac{1}{15}\pi \approx 0.209$

C) $\dfrac{7}{5}\pi \approx 4.398$

D) $\dfrac{16}{15}\pi \approx 3.351$

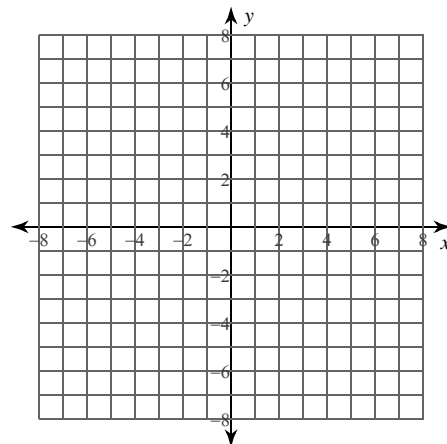6) $y = 4$, $y = (x-2)^2$, $x = 2$, $x = 4$
  Axis: $x = 2$



A) $7\pi \approx 21.991$
B) $8\pi \approx 25.133$
C) $9\pi \approx 28.274$
D) $\dfrac{15}{2}\pi \approx 23.562$

7) $x = 1$, $x = y^3$, $y = 0$
  Axis: $y = 0$



A) $\dfrac{3}{5}\pi \approx 1.885$    B) $\dfrac{8}{5}\pi \approx 5.027$

C) $\dfrac{2}{5}\pi \approx 1.257$    D) $\dfrac{7}{5}\pi \approx 4.398$
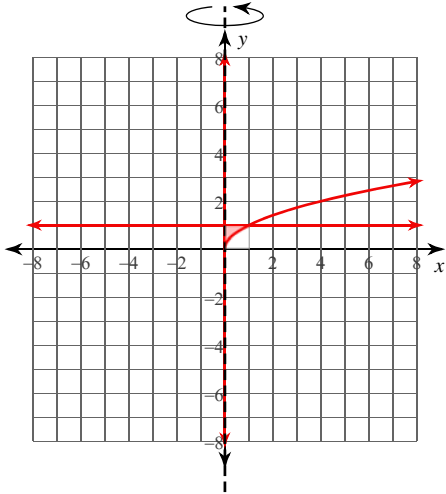
8) $x = 4$, $x = y^2$, $y = 0$, $y = 2$
  Axis: $y = 0$



A) $10\pi \approx 31.416$
B) $8\pi \approx 25.133$
C) $6\pi \approx 18.85$
D) $7\pi \approx 21.991$

Name_____

# Calculus Practice: Using Definite Integrals to Calculate Volume 4a
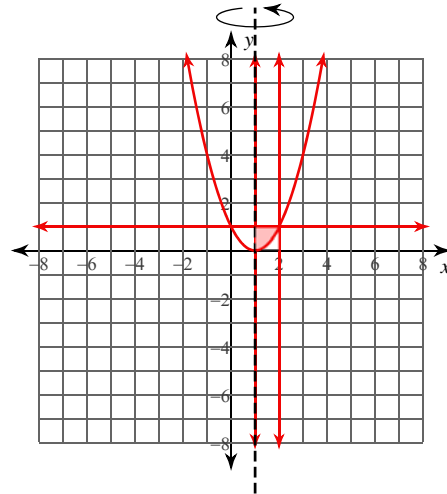
**For each problem, find the volume of the solid that results when the region enclosed by the curves is revolved about the given axis. You may use the provided graph to sketch the curves and shade the enclosed region.**

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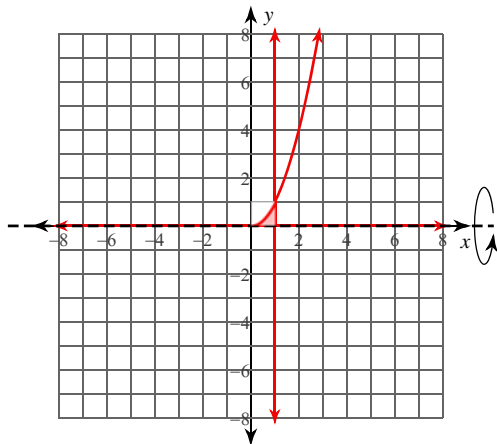   Axis: $x = 0$



A) $\dfrac{9}{5}\pi \approx 5.655$    B) $\dfrac{2}{5}\pi \approx 1.257$

*C) $\dfrac{1}{5}\pi \approx 0.628$    D) $\dfrac{3}{5}\pi \approx 1.885$

2) $y = (x - 1)^2$, $y = 1$, $x = 1$, $x = 2$
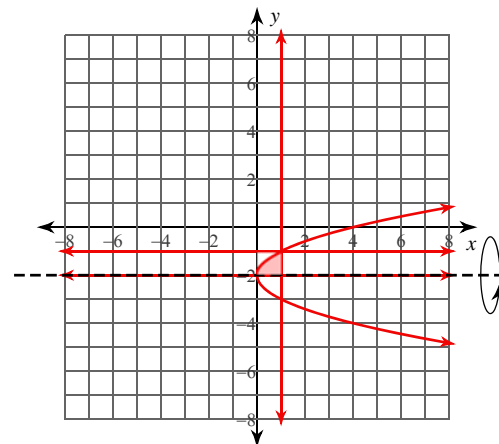   Axis: $x = 1$



A) $\pi \approx 3.142$    *B) $\dfrac{1}{2}\pi \approx 1.571$

C) $\dfrac{1}{6}\pi \approx 0.524$    D) $\dfrac{5}{2}\pi \approx 7.854$

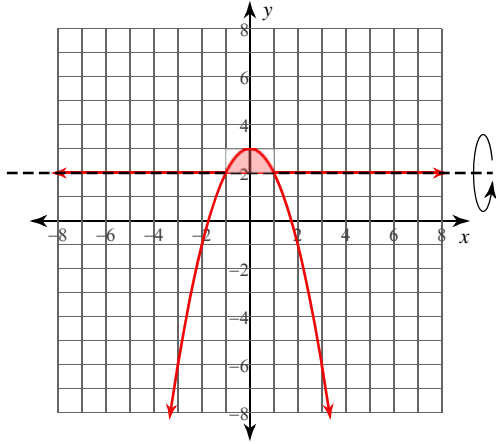3) $x = 1$, $x = \sqrt{y}$, $y = 0$
   Axis: $y = 0$



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

*B) $\dfrac{1}{5}\pi \approx 0.628$

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

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

4) $x = 1$, $x = (y + 2)^2$, $y = -2$, $y = -1$
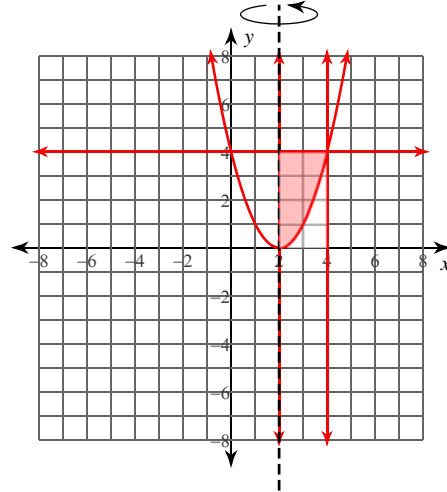   Axis: $y = -2$



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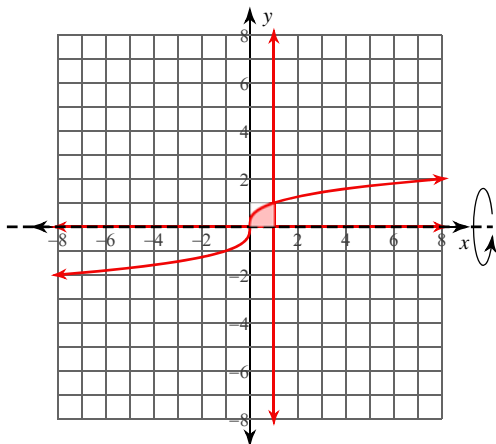5) $x = -\sqrt{3 - y}$, $x = \sqrt{3 - y}$, $y = 2$
   Axis: $y = 2$

A) $\dfrac{47}{30}\pi \approx 4.922$

B) $\dfrac{1}{15}\pi \approx 0.209$

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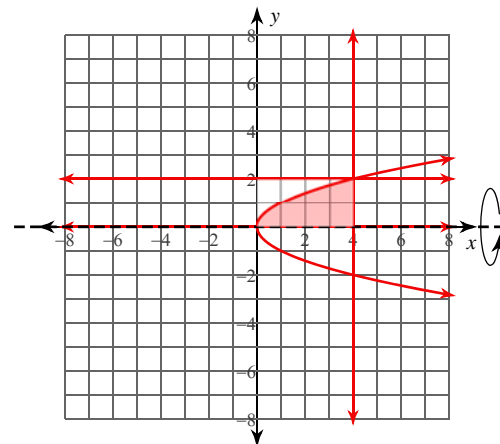6) $y = 4$, $y = (x - 2)^2$, $x = 2$, $x = 4$
   Axis: $x = 2$

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8) $x = 4$, $x = y^2$, $y = 0$, $y = 2$
   Axis: $y = 0$

A) $10\pi \approx 31.416$

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