

# Fill in the Blanks

## Volumes of Revolution Around the X-Axis

Question	Definite Integral	Integrate...	Evaluate Upper and Lower Limits		Volume of Revolution
Find the volume of the solid formed when the curve $y = x^2$ is rotated $360^\circ$ around the $x$ -axis between $x = 1$ and $x = 3$	$\pi \int_1^3 x^4 dx$	$\pi \left[ \frac{x^5}{5} \right]_1^3$	$\frac{243}{5} \pi$	$\frac{1}{5} \pi$	$\frac{242}{5} \pi$
Find the volume of the solid formed when the curve $y = 2\sqrt{x}$ is rotated $2\pi$ radians around the $x$ -axis between $x = 2$ and $x = 5$	$\pi \int_2^5 4x dx$	$\pi \left[ \frac{4x^2}{2} \right]_2^5$	$50\pi$	$8\pi$	$42\pi$
Find the volume of the solid formed when the curve $y^2 = 1 + \frac{1}{\sqrt{x}}$ is rotated $360^\circ$ around the $x$ -axis between $x = 4$ and $x = 9$	$\pi \int_4^9 1 + x^{-1/2} dx$	$\pi \left[ x + 2x^{1/2} \right]_4^9$	$15\pi$	$8\pi$	$7\pi$
Find the volume of the solid formed when the curve $y = \frac{1}{2} \sqrt[3]{x}$ is rotated $360^\circ$ around the $x$ -axis between $x = 1$ and $x = 8$	$\pi \int_1^8 \frac{1}{4} x^{2/3} dx$	$\pi \left[ \frac{3x^{5/3}}{20} \right]_1^8$	$\frac{24}{5} \pi$	$\frac{3}{20} \pi$	$\frac{93}{20} \pi$
Find the volume of the solid formed when the curve $y = \frac{\sqrt{x^3-1}}{3}$ is rotated $2\pi$ radians around the $x$ -axis between $x = 2$ and $x = 4$	$\pi \int_2^4 \frac{1}{9} (x^3 - 1) dx$	$\pi \left[ \frac{x^4}{36} - \frac{x}{9} \right]_2^4$	$\frac{20}{3} \pi$	$\frac{2}{9} \pi$	$\frac{58}{9} \pi$
Find the volume of the solid formed when the curve $y^2 = 6x\sqrt{x}$ is rotated $2\pi$ radians around the $x$ -axis between $x = 0$ and $x = 2$	$\pi \int_0^2 6x^{3/2} dx$	$\pi \left[ \frac{12x^{5/2}}{5} \right]_0^2$	$\frac{48\sqrt{2}}{5} \pi$	$0$	$\frac{48\sqrt{2}}{5} \pi$