

Fill in the Blanks

Volumes of Revolution Around the Y-Axis

Question	Definite Integral	Integrate...	Evaluate Upper and Lower Limits		Volume of Revolution
Find the volume of the solid formed when the curve $x^2 = 4y$ is rotated 360° around the y-axis between $y = 1$ and $y = 4$	$\pi \int_1^4 4y \, dy$	$\pi \left[\frac{4y^2}{2} \right]_1^4$	32π	2π	30π
Find the volume of the solid formed when the curve $x = \frac{2}{3}y^2$ is rotated 2π radians around the y-axis between $y = 2$ and $y = 3$	$\pi \int_2^3 \frac{4}{9}y^4 \, dy$	$\pi \left[\frac{4y^5}{45} \right]_2^3$	$\frac{108}{5}\pi$	$\frac{128}{45}\pi$	$\frac{844}{45}\pi$
Find the volume of the solid formed when the curve $x = \frac{1}{5}\sqrt{y^3}$ is rotated 360° around the y-axis between $y = 0$ and $y = 5$	$\pi \int_0^5 \frac{1}{25}y^3 \, dy$	$\pi \left[\frac{y^4}{100} \right]_0^5$	$\frac{25}{4}\pi$	0	$\frac{25}{4}\pi$
Find the volume of the solid formed when the curve $y = x^2 - 6$ is rotated 2π radians around the y-axis between $y = 1$ and $y = \frac{3}{2}$	$\pi \int_1^{3/2} (y + 6) \, dy$	$\pi \left[\frac{y^2}{2} + 6y \right]_1^{3/2}$	$\frac{81}{8}\pi$	$\frac{13}{2}\pi$	$\frac{29}{8}\pi$
Find the volume of the solid formed when the curve $x = 3\sqrt{y}$ is rotated 360° around the y-axis between $y = 2$ and $y = 7$	$\pi \int_2^7 9y \, dy$	$\pi \left[\frac{9y^2}{2} \right]_2^7$	$\frac{441}{2}\pi$	18π	$\frac{405}{2}\pi$
Find the volume of the solid formed when the curve $y = 2x^2 - 3$ is rotated 2π radians around the y-axis between $y = 0$ and $y = 4$	$\pi \int_0^4 \frac{y + 3}{2} \, dy$	$\pi \left[\frac{y^2}{4} + \frac{3y}{2} \right]_0^4$	10π	0	10π