

AP Calculus AB

Practice Worksheet: Area and Volume (Disk and Washer)

1. Find the area between the curve $y = x^2 - 2$ and the line $y = 2$. $\frac{32}{3}$
2. Find the area between the curve $y = x^2 - 4x - 5$ and the curve $y = 2x - 5$. 36
3. Find the area between the curve $x = y^2$ and the line $x = y + 2$. $\frac{9}{2}$
4. Find the volume of the solid that results when the region bounded by $y = \sqrt{9 - x^2}$ and the x-axis is revolved around the x-axis. 36π
5. Find the volume of the solid that results when the region bounded by $y = \sec x$ and the x-axis from $x = -\frac{\pi}{4}$ to $x = \frac{\pi}{4}$ is revolved around the x-axis. 2π
6. Find the volume of the solid that results when the region bounded by $x = 1 - y^2$ and the y-axis is revolved around the y-axis. $\frac{16\pi}{15}$
7. Find the volume of the solid that results when the region bounded by $x = \sqrt{5}y^2$ and the y-axis from $y = -1$ to $y = 1$ is revolved around the y-axis. 2π
8. Find the volume of the solid that results when the region bounded by $y = x^3$, $x = 2$, and the x-axis is revolved around the line $x = 2$. $\frac{16\pi}{5}$
9. Find the volume of the solid that results when the region bounded by $y = e^x$, $y = 1$, and $x = -1$ is rotated about the x-axis. $\pi \left(\frac{1}{2} + \frac{1}{2e^2} \right)$
10. Find the volume of the solid that results when the region bounded by $y = x^2 + 6$, $y = 5x$ and $x = 0$ is rotated about the x-axis. $\frac{656\pi}{15}$
11. Find the volume of the solid that results when the region bounded by $y = 3x$, $y = 2x$, and $y = 3$ is rotated about the y-axis. $\frac{5\pi}{4}$
12. Find the volume of the solid that results when the region bounded by $y = x$ and $y = x^2$ is rotated about:

a) the x-axis
 b) the line $y = 2$
 c) the line $x = -1$

$a) \frac{2\pi}{15}$

$b) \frac{8\pi}{15}$

$c) \frac{\pi}{2}$