

Solids of Revolution Around any Horizontal or Vertical Line

Direction: Find the volume of each solid without using a calculator (except #8).

1. The region between $f(x) = 1 + \sin x$ and the x-axis from $x = 0$ to $x = \frac{\pi}{2}$ is revolved around the line $y = -2$.
2. The region between $f(x) = 1 + \sin x$ and the x-axis from $x = 0$ to $x = \frac{\pi}{2}$ is revolved around the line $y = 4$.
3. The region between the x-axis and $f(x) = x^2$ from $x = 0$ to $x = 4$ is revolved around the y-axis.
4. The region enclosed between $f(x) = \sqrt{x}$ and $g(x) = x^2$ is revolved around the line $x = 1$.
5. The region enclosed between $f(x) = \sqrt{x}$ and $g(x) = x^2$ is revolved around the line $x = -3$.
6. The region enclosed between $f(x) = \sqrt{x}$ and $g(x) = x^2$ is revolved around the line $y = 2$.
7. The region enclosed between $f(x) = \sqrt{x}$ and $g(x) = x^2$ is revolved around the line $y = -4$.
8. The region between $f(x) = \frac{1}{1+x^2}$ from $x = -1$ to $x = 1$ is revolved around the line $y = 2$.
9. The region between $f(x) = \frac{1}{x}$, $x = 1$, $x = 2$, and the x-axis is revolved around the line $x = 3$.
10. The region between $f(x) = \frac{1}{x}$, $x = 1$, $x = 2$, and the x-axis is revolved around the line $y = -3$.