

Suggestions for volumes of solids of revolution

- Sketch the region R that is being rotated and the line R is rotated about
- Sketch the solid after R is rotated

- Write integral as Volume = $\int_a^b A(x) dx$.

To find $A(x)$:

- Draw a vertical cross-section at an arbitrary x -value
- Use this to write an expression for $A(x)$

- Use whatever you need in your toolbox to evaluate $\int_a^b A(x) dx$

1. Sketch each solid described, and set up the integral that gives its volume
 - (a) The solid formed when the region bounded by $y = 4 - 2x$, the x -axis and the y -axis is rotated about the x -axis
 - (b) The solid formed when the region bounded by $y = \sqrt{x \sin(x)}$, the x -axis and the line $x = 3$ is rotated about the x -axis
 - (c) The solid formed when the region bounded by $y = x^2 + 1$ and $y = x + 3$ is rotated about the x -axis
 - (d) The volume when the region from (c) is rotated about the line $y = 8$
2. Find the volume of each solid by computing the integrals you set up in #1