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 $\int_a^b A(x)\ dx$

Work on these with your partner(s) at the board

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