For each problem, sketch the area bounded by the equations and revolve it around the x-axis. Find the volume of the resulting solid formed by this revolution. Leave your answers in terms of π.

1. $y = -x + 4$, $x = 1$, $y = 0$

2. $y = -\sqrt{x}$, $x = 2$, $x = 3$

Same instructions as above but use a calculator and round to three decimals.

3. $y = 2 - x^2$, $x = 0$

4. $y = \sqrt{16 - x^2}$, $x = -1$, $y = 0$

Same instructions as above but revolve around the y-axis now. Leave your answers in terms of π.

5. $y = \sqrt{16 - x^2}$, $x \geq 0$, $y = 0$

6. $y = x^3$, $x = 0$, $y = 8$

Find the volume by revolving the area about the given line. Set up the integral, then use a calculator to evaluate. Remember 3 DECIMALS in AP Calculus!!

7. $y = 3 - x^2$ and $y = -1$ about the line $y = -1$.

8. $x = \sqrt{y}$, $y = 4$, $x = -1$, $y = 1$ about the line $x = -1$.

Answers to 11.2 CA #1

1. $\pi \int_1^4 (-x+4)^2 \, dx = 9\pi$	2. $\pi \int_2^3 x \, dx = \frac{5}{2}\pi$	3. $\pi \int_0^{\sqrt{2}} (2-x^2)^2 \, dx = 9.478$
4. $\pi \int_{-1}^4 (16 - x^2) \, dx = 183.2596$	5. $\pi \int_0^4 (16 - y^2) \, dy = \frac{128}{3}\pi$	6. $\pi \int_0^8 \left(\sqrt[3]{y}\right)^2 \, dy = \frac{96}{5}\pi$
7. $\pi \int_{-2}^2 (4 - x^2)^2 \, dx = 107.233$	8. $\pi \int_1^4 \left(\sqrt{y} + 1\right)^2 \, dy = 62.308$	