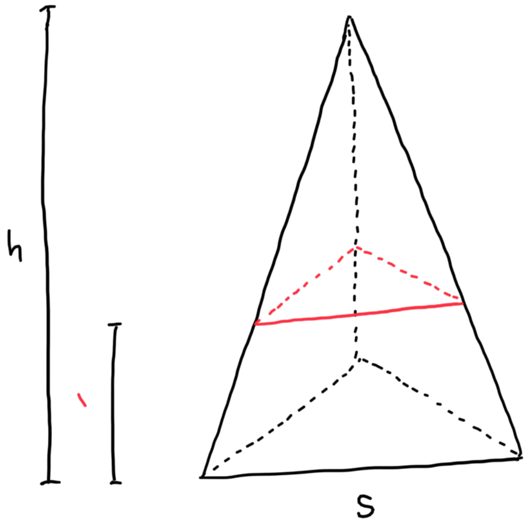
Math 221 Worksheet 26
December 8, 2020
Section 5.2: Volumes

1. Let R denote the region bounded by the curves $y = x^2$, $x = 2$, and $y = 0$. Find the volume of the solid whose horizontal base is R and whose vertical cross sections are semi-disks.

2. Find the volume of the solid whose horizontal base is a disk of radius r and whose vertical cross sections are equilateral triangles. (Hint: The area of an equilateral triangle with side-length s is $\frac{\sqrt{3}s^2}{4}$).

3. Find a formula for the volume of a right pyramid whose base is an equilateral triangle of side-length s and whose height is h.



4. Find the volume of the solid obtained by revolving the region bounded by the curves $y = \sqrt{9 - x^2}$ and $y = 0$ about the x-axis.

5. Find the volume of the solid obtained by revolving the region enclosed by the curves $x = \sqrt{2\sin(2y)}$ $(0 \le y \le \frac{\pi}{2})$ and $x = 0$ about the y-axis.

6. Find the volume of the solid obtained by revolving the region bounded by the curves $y = \sqrt{\cos(x)}$ $(0 \le x \le \frac{\pi}{2})$, $y = 0$, and $x = 0$ about the x-axis.

7. Write down an integral that represents the volume of the solid obtained by revolving the region bounded by the curves $y = 4 - x^2$ and $y = 2 - x$ about the x-axis.

8. Write down an integral that represents the volume of the solid obtained by revolving the region bounded by the curves $y = x^2$ and $y = 1$ about the line $y = -2$.

9. Write down an integral that represents the volume of the solid obtained by revolving the region bounded by the curves $y = \sqrt{x}$, $y = 2$, and $x = 0$ about the line $x = 4$.