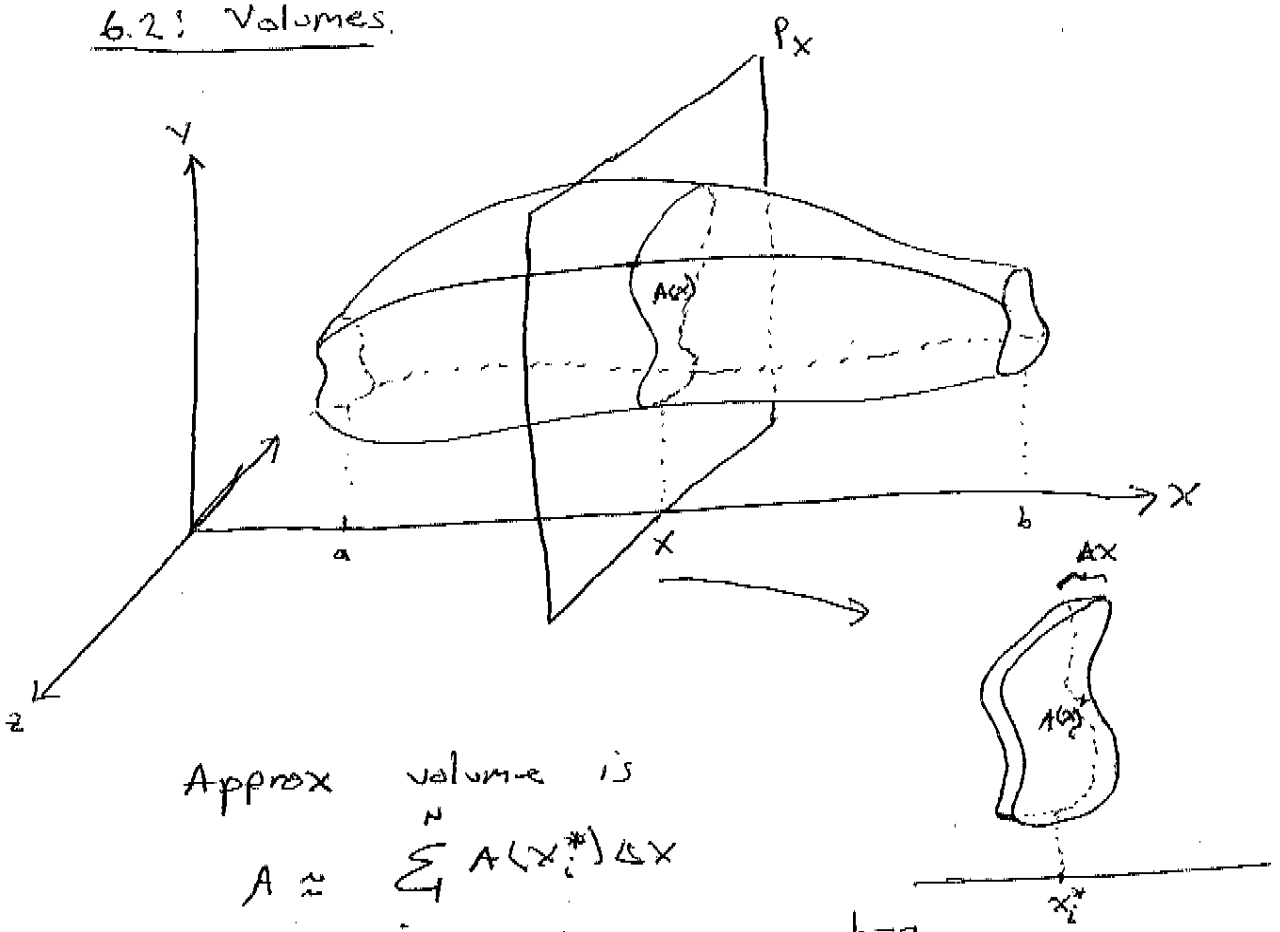
6.2: Volumes.



Approx volume is

$$A \approx \sum_{i=1}^{n} A(x_i^*)\Delta x$$

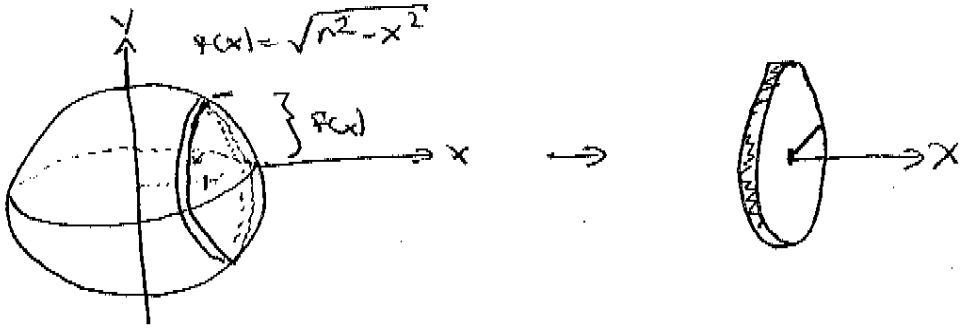
where $\Delta x = \frac{b-a}{n}$

and $x_{i-1} \le x_i^* \le x_i$

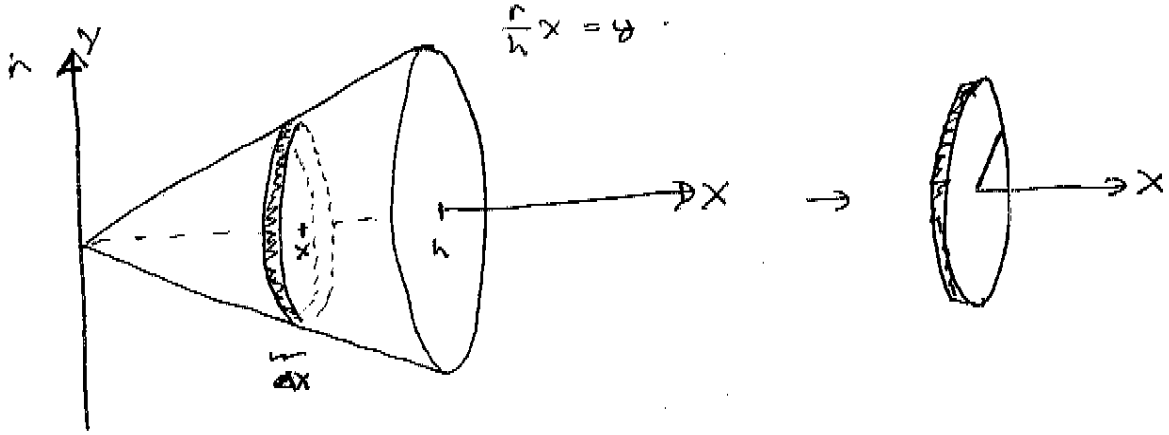
Defn: Volume: Let S be a solid that lies between $x=a$ & $x=b$. If the cross-sectional area of S in the plane P_x, thru x & $\perp$ to the x-axis, is $A(x)$, where A is a cont. fct, then the volume of S is $V = \lim_{n\to\infty} \sum_{i=1}^{n} A(x_i^*)\Delta x = \int_a^b A(x)\,dx$.

6.2
2/2

Ex1: Derive the volume of a sphere.



Ex2: Find the volume of the cone w/ height h and radius r.



Ex3: Find the volume of the solid obtained by rotating the region bounded by $y=x^2$, $y=4$, and $x=0$ about the y-axis (model).

Ex4: The region R enclosed by the curves $y=x^2$ and $y=\sqrt{x}$ is rotated about the x-axis. Find the volume of the resulting solid.

Ex5: Same as (4), but rotate about $y=5$.

Have students work examples online on day 2. (1-5).