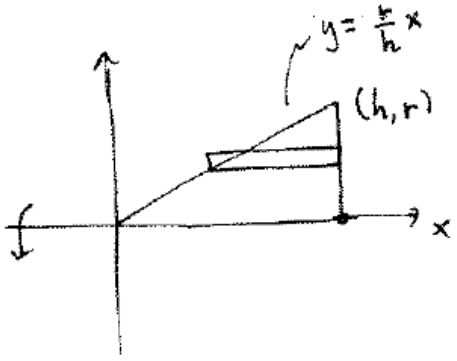
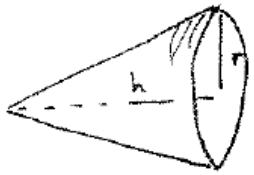
Math 1210-001
Tuesday Apr 19
WEB L110

Warmup exercise:

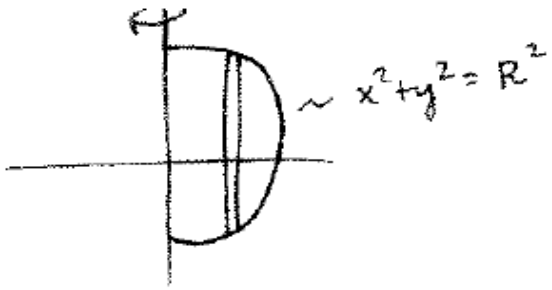
• 5.3: Volumes by cylindrical shells. We started talking about the setup yesterday. Finish those notes - Exercises 4,5, and then we'll do a couple more examples from today's notes.

Exercise 1) Yesterday we derived the formula for the volume of a cone, $V = \frac{1}{3}\pi r^2 h$, by chopping a triangle perpendicular to the axis of rotation, via disk slabs. To practice using cylindrical shells chop the region parallel to the axis of rotation instead, set up and compute the integral.





Exercise 2) Recompute the volume of the radius R ball, using cylindrical shells:



If we have time, here's a fun slicing (NOT cylindrical shells) problem:

Exercise 3) A ball of radius R is peeled so that cross sections perpendicular to the x-axis, at location "x" are squares with diagonal lengths $2\sqrt{R^2 - x^2}$. Find the resulting volume. (Ans $= \frac{8}{3}R^3$)