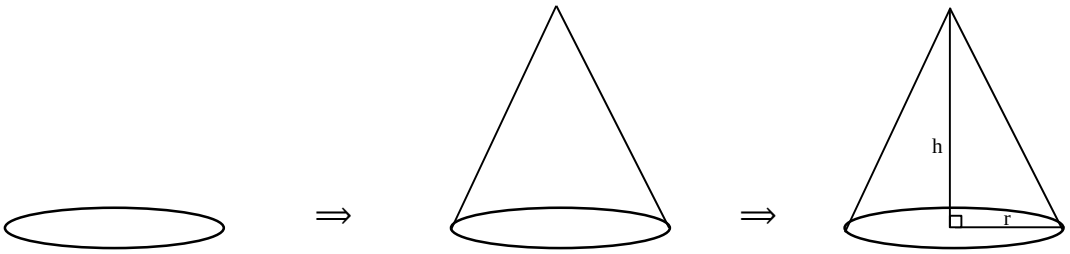
The Weekly Rigor

No. 96 "A mathematician is a machine for turning coffee into theorems." April 23, 2016

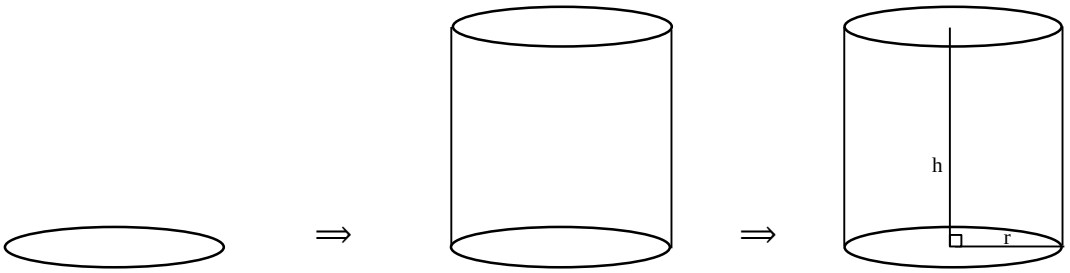
An Essential Skill for Calculus Students: Plane Geometry

(Part 3)

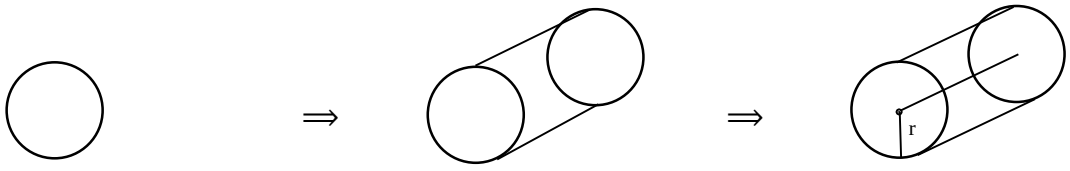
Drawing a cone comes down to drawing an isosceles triangle on top of a horizontally-oriented oval:



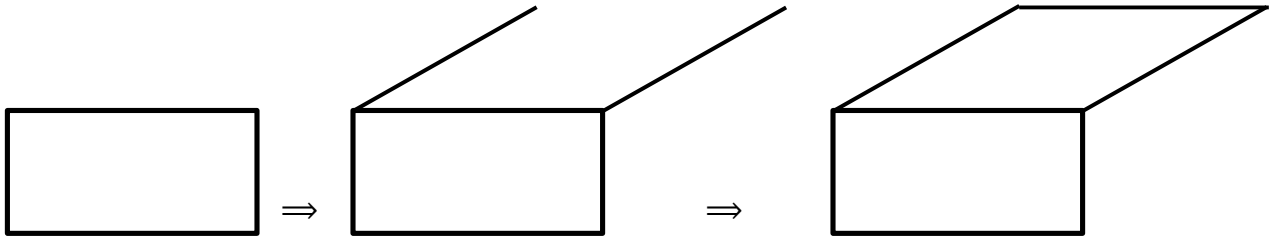
Drawing a vertical cylinder amounts to drawing two connected horizontally-oriented ovals, one directly above the other:



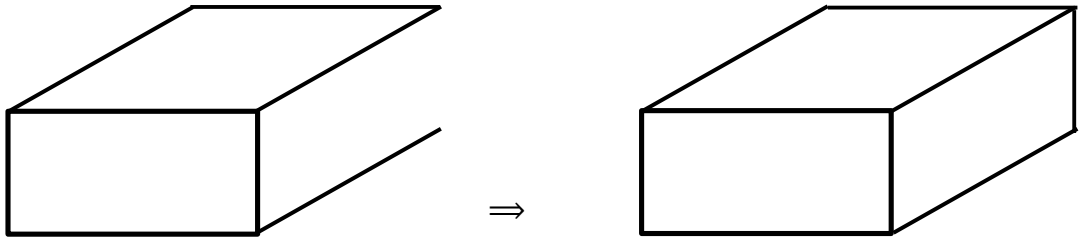
Whereas drawing a horizontal cylinder is a matter of drawing two connected circles, one "behind" the other:



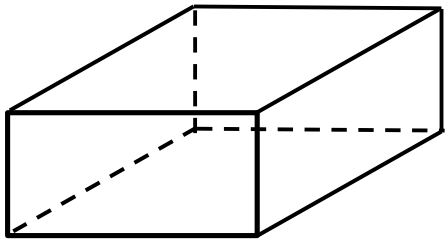
To draw a rectangular box, first draw a rectangle. Next draw lines that start at the two top corners, go up to the right, and *are parallel to each other*. Make sure that those two lines are the same length and that a horizontal line can join their ends.



Now from the lower right corner of the rectangle draw a line that is parallel to the top lines. Draw it long enough so that a vertical line can join the upper right corner of the top to the end of the line.



Finally, add dashed lines parallel to the others to give perspective to the "unseen" part of the box.



The key principle in drawing the box is parallel lines. Note carefully the set of horizontal lines, the set of vertical lines, and the set of horizontal lines that shoot off to the upper right. Each set has four lines.