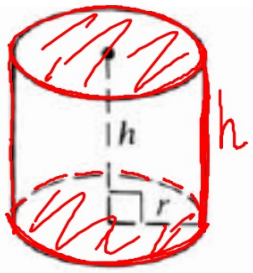
12-3 Cylinders and Cones

March 27

std. 9.0

cylinder



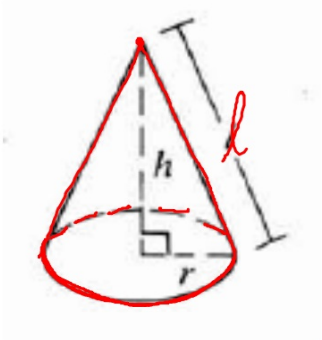
h

★ Lateral Area = $2\pi rh$

Total Area = $2\pi rh + 2\pi r^2$
(LA)

★ Volume = $\pi r^2 h$

cone



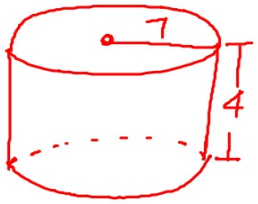
Lateral Area = $\frac{1}{2}(2\pi r)l$ $\overset{p}{}$ $\overset{l}{}$ $= \boxed{\pi r l = LA}$ ★

Total Area = $LA + \pi r^2$

★Volume = $\frac{1}{3}\pi r^2 h$

Examples

1 A cylinder has radius 7 in. and height 4 in.
Find lateral area, total area, and volume.



$LA = 2\pi rh = 2 \cdot \pi \cdot 7 \cdot 4 = 56\pi \text{ in}^2$

$TA = LA + 2(\pi r^2) = 56\pi + 2(49\pi)$

$= 154\pi \text{ in}^2$

$V = \pi r^2 h = 49\pi \cdot 4 = 196\pi \text{ in}^3$

2 A cone has lateral area 136π and radius 8.
Find slant height, total area, and volume.

$V = \frac{1}{3}\pi r^2 h$

$\frac{1}{3}\pi(64)(15) = 320\pi$

$LA = \pi r l$

$\frac{136\pi}{8\pi} = \frac{\pi \cdot 8 l}{8\pi}$

$l = 17$

$TA = LA + B$

$TA = 136\pi + \pi(8^2)$

200π