Basic Surface Area & Volume of Cylinders-Notes

Surface Area:	Lateral Area:	Volume: V=BH
$SA = 2\pi r^2 + 2\pi rh$	$LA = 2\pi rh$ NO BASES!	B = AREA of BASE $B = \pi r^2$ H= Height connecting two bases.

Example1:
Find the volume, lateral area and surface area of the prism.

$h = 12$ in.

5

$\leftarrow$ 10 in. $\rightarrow$

Top   5

Bottom   5

Bases

$b = C = 2\pi r$

$h = 12$
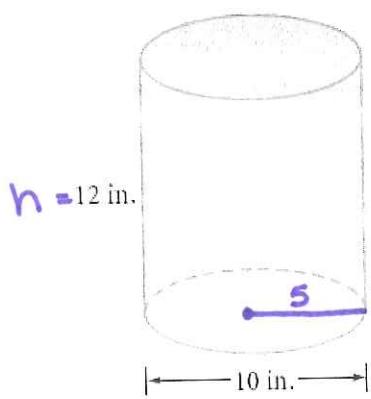
Lateral surface

$SA = 2\pi r^2 + 2\pi rh$

$\quad = 2\pi 5^2 + 2\pi 5 \cdot 12$

$\quad = 50\pi + 120\pi$

$\boxed{SA \approx 534.1 \text{ in}^2}$

$LA = 2\pi rh$

$\quad = 2\pi 5 \cdot 12$

$\boxed{LA \approx 377.0 \text{ in}^2}$

$\quad\quad \curvearrowright$ rounded up
$\quad\quad$ from 376.99

$V = BH = \pi r^2 h$

$V = \pi 5^2 \cdot 12$

$\quad = 300\pi$
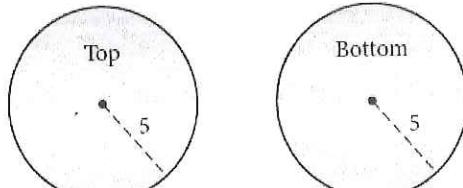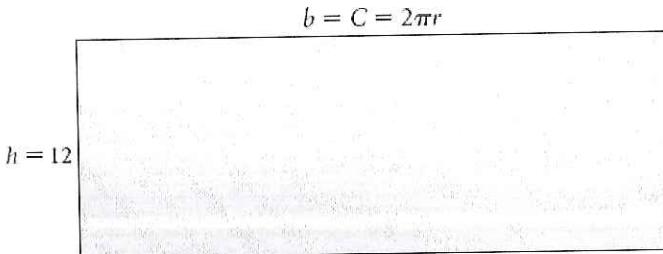
$\boxed{V \approx 942.5 \text{ in}^3}$

2. Find the volume, lateral area and surface area of the solid.

8.3 ft

6.6 ft
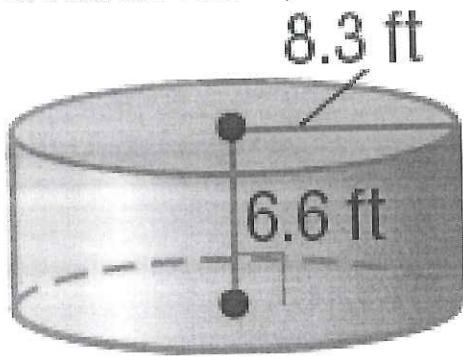
$SA = 2\pi r^2 + 2\pi rh$

$= 2\pi\, 8.3^2 + 2\pi\, 8.3 \cdot 6.6$

$SA \approx 777.0 \text{ ft}^2$

$V = BH = \pi r^2 h$

$= \pi\, 8.3^2 \cdot 6.6$

$V \approx 1428.4 \text{ ft}^3$

$LA = 2\pi rh$

$= 2\pi\, 8.3 \cdot 6.6$

$LA \approx 344.2 \text{ ft}^2$

3. Given the cylinder below, find the height. V = 11083.5 ft³

14 ft
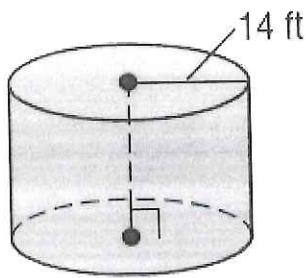
$V = \pi r^2 h$

$11083.5 = \pi\, 14^2 h$

$\dfrac{11083.5}{(196\pi)} = \dfrac{196\pi \cdot h}{196\pi}$

$h = 18 \text{ ft}$

4. The volume of a cylinder is 54π ft³ and the height is 3 ft. Find the diameter of the Cylinder.

↑
need to find radius first.

$V = \pi r^2 h$

$\dfrac{54\pi}{3\pi} = \dfrac{\pi r^2 \, 3}{3\pi}$

$\sqrt{18} = \sqrt{r^2}$

$r = 4.2 \text{ ft}$

$d = 4.2 + 4.2$

$d = 8.4 \text{ ft}$