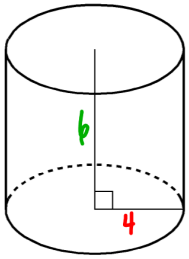
7.4 Cylinders

$SA = L + 2B$

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



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

$SA = 2\pi(4)(6) + 2\pi(4)^2$

$SA = 48\pi + 32\pi$ (150.796 + 100.53)

$SA = 80\pi$

$SA \approx 251.33$ units^2

Double height

$SA = 2\pi(4)(12) + 2\pi(4)^2$

$SA = 96\pi + 32\pi$

$SA = 128\pi$

Double height & radius

$SA = 2\pi(8)(12) + 2\pi(8)^2$

$SA = 192\pi + 128\pi$

$SA = 320\pi$ SA quadruple

$SA = 70\pi$

$h = 2$

$r = ?$ 5 units

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

$70\pi = 2\pi r(2) + 2\pi r^2$

$\frac{70\pi}{\pi} = \frac{4\pi r}{\pi} + \frac{2\pi r^2}{\pi}$

$70 = 4r + 2r^2$ (−70)

$2r^2 + 4r - 70 = 0$

Set = 0

GCF

Factor

$2(r^2 + 2r - 35) = 0$

$2(r-5)(r+7) = 0$

Set each factor = 0

Solve

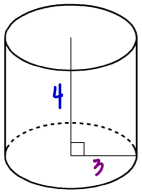
$2 \neq 0$ $\quad r - 5 = 0$ (+5 +5) $\quad r + 7 = 0$ (−7 −7)

$r = 5$ $\quad r = -7$

Volume

$V = Bh$

$V = \pi r^2 h$



$V = \pi r^2 h$

$V = \pi (3)^2 (4)$

$V = \pi (9)(4)$

$V = 36\pi$ units^3

exact

approximate $V = 113.097$ units^3

Double height Double volume

$V = \pi r^2 h'$

$V = \pi r^2 (2h)$

Double radius Volume quadruple

$V = \pi (3^2)(4)$

$V = 36\pi$

$V = \pi (6^2)(4)$ $\times 4$

$V = 144\pi$

Double $\times 2^2 = 4$

Double height and radius

$V = \pi (6^2)(8)$

$V = 288\pi$

Volume 8 times

Double $\times 2$ h $\times 2$ r^2 $\times 4$ $> \times 8$

p456

14-32 E