

1) $S = \pi r \sqrt{r^2 + h^2}$

a) $S = \pi(11) \sqrt{11^2 + 3^2} = 394.016$

b) $150 = \frac{\pi(5) \sqrt{5^2 + h^2}}{\pi}$

$30 = \sqrt{5^2 + h^2}$

$h^2 + 25 = \left(\frac{30}{\pi}\right)^2$

$h^2 = \left(\frac{30}{\pi}\right)^2 - 25$

$h = \sqrt{\left(\frac{30}{\pi}\right)^2 - 25}$

$= 8.1357$

c) $h = 2r$

$S = \pi r \sqrt{r^2 + 4r^2}$

$100 = \pi r \sqrt{5r^2}$

$\frac{100}{\pi r} = \sqrt{5r^2}$

$5r^2 = \frac{100^2}{\pi^2 r^2}$

$5\pi^2 r^4 = 10000$

$r^4 = \frac{10000}{5\pi^2}$

$r^4 = 202.642$

$r = 3.773$

2) a) $A - B - C = -7 \quad \times 2$
 $B - C - A = 3$
 $C - A - B = 5$

$2A - 2B - 2C = -14$

$-A + B - C = 3$

$-A - B + C = 5$

$-2B - 2C = -6$

$B + C = 3$

$A - (B + C) = -7$

$A - 3 = -7$

$A = -7 + 3 = -4$

$4 + B - C = 3$

$B - C = -1$

$B + C = 3$

$B - C = -1$

$2B = 2$

$B = 1$

$\Rightarrow -4 - 1 - C = -7 \Rightarrow C = -4 - (-7) \Rightarrow C = 2$

$a = -4$

$b = 1$

$c = 2$

$$\begin{array}{l}
 b) \quad A - B - C - D = -6 \Rightarrow A - B - C - D = -6 \\
 \quad B - C - D - A = -2 \quad -A + B - C - D = -2 \\
 \quad C - D - A - B = 4 \quad -A - B + C - D = 4 \quad (\text{multiply by } -1) \text{ to eliminate } B \\
 \quad D - A - B - C = 8 \quad -A - B - C + D = 8
 \end{array}$$

$$\begin{array}{l}
 \Rightarrow A - B - C - D = -6 \\
 \quad -A + B - C - D = -2 \\
 \quad A + B - C + D = -4 \\
 \quad -A - B - C + D = 8 \\
 \hline
 \quad \quad -4C = -4 \\
 \quad \quad C = 1
 \end{array}$$

$$\begin{array}{l}
 \Rightarrow A - B - 1 - D = -6 \Rightarrow A - B - D = -5 \quad ① \\
 \quad -A + B - 1 - D = -2 \quad -A + B - D = -1 \quad ② \\
 \quad A + B - 1 + D = -4 \quad A + B + D = -3 \quad ③ \\
 \quad -A - B - 1 + D = 8 \quad -A - B + D = 9 \quad ④
 \end{array}$$

$$\begin{array}{l}
 ① -B - D = -5 - A \\
 \quad B + D = 5 + A
 \end{array}$$

$$\begin{array}{l}
 \text{Using } ③ \quad A + 5 + A = -3 \\
 \quad 2A = -8 \\
 \quad A = -4
 \end{array}$$

$$\begin{array}{l}
 B + D = 5 - 4 \\
 \quad B + D = 1
 \end{array}$$

From top

$$\begin{array}{l}
 5) \quad c) \quad \pi \left[2\pi(3)\left(\frac{24}{\pi}\right) + 2\pi(9) \right] = 508.94(2) \\
 \quad \pi \left[\frac{144\pi}{\pi} + 18\pi \right] = 1017.84 \\
 \quad 144\pi + 18\pi\pi = 1017.84 \\
 \quad 18\pi = 565.4507 \\
 \quad \pi = 31.414
 \end{array}$$

$$\begin{array}{l}
 a) \quad 2\pi r h + 2\pi r^2 \\
 \quad 2\pi(3)(24) + 2\pi(9) \\
 \quad = 508.94
 \end{array}$$

$$\begin{array}{l}
 b) \quad 3 \left[2\pi(3)(8) + 2\pi(9) \right] \\
 \quad = 622.038
 \end{array}$$