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let the height of the cylinder be  $h$

$$\pi(2 + \sqrt{3})^2 h = \pi(26 + 4\sqrt{48})$$

$$(4 + 4\sqrt{3} + 3)h = (26 + 4\sqrt{48})$$

$$h = \frac{26 + 4\sqrt{48}}{7 + 4\sqrt{3}}$$

$$h = \frac{26 + 4\sqrt{48}}{7 + 4\sqrt{3}} \times \frac{7 - 4\sqrt{3}}{7 - 4\sqrt{3}} \quad (\text{rationalise})$$

$$h = \frac{(26 + 16\sqrt{3})(7 - 4\sqrt{3})}{49 - 48}$$

$$h = 182 + 112\sqrt{3} - 104\sqrt{3} - 192$$

$$\therefore h = 8\sqrt{3} - 10 \quad \text{Ans}$$

