

Frustum:

A pyramid or cone with the vertex (top)

sliced off

$$\text{Volume} = \frac{1}{3}h(B_1 + B_2 + \sqrt{B_1B_2})$$

$$A = \frac{(\text{sum of perimeter of bases})}{2}$$

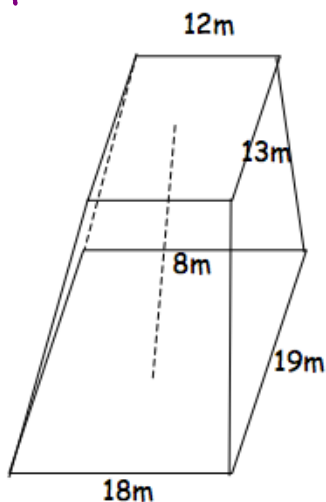
Where h = height (perpendicular distance between bases)

B_1 = area of top base, B_2 = area of bottom base.

$$B_1 = 12(13) = 156 \text{ m}^2$$

$$B_2 = 18(19) = 342 \text{ m}^2$$

$$h = 8 \text{ m}$$



V =

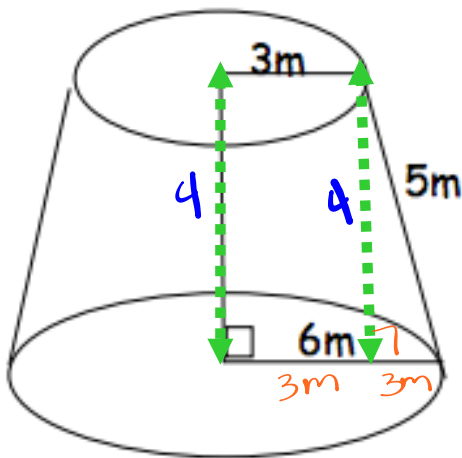
$$V = \frac{1}{3}(8)(156 + 342 + \sqrt{156 \cdot 342})$$

Handwritten calculation for the square root: $\sqrt{156 \cdot 342}$. The factors are shown as $12 \cdot 13$ and $18 \cdot 19$. The product is $43 \cdot 36$. The square root is $22 \cdot 6 = 132$.

$$V = \frac{1}{3}(8)(498 + 132)$$
$$V = 1328 + 196\sqrt{1482} \text{ m}^3$$

$$h = 4\text{m}$$

$$3^2 + x^2 = 5^2$$



$$B_1 = \pi(3^2) = 9\pi$$

$$B_2 = \pi(6^2) = 36\pi$$

$$V = \frac{1}{3}(4) \left(9\pi + 36\pi + \sqrt{9\pi \cdot 36\pi} \right)$$

$$V = \frac{1}{3}(4) (45\pi + 18\pi)$$

$$V = \frac{1}{3}(4) (63\pi)$$

$$V = 84\pi \text{ m}^3$$