

### Cones e Troncos:

Cones:

1.

①  $P = \frac{2\pi r}{2} \rightarrow P = \pi \cdot 20 \rightarrow P = 20\pi$

$\frac{\text{base}}{2} = \frac{\text{semicírculo}}{2} = \frac{20}{2} = 10$

$\text{semicírculo} = \text{hipotenusa} = 20 = g$

$g^2 = h^2 + r^2$   
 $20^2 = h^2 + 10^2$   
 $h^2 = 400 - 100$   
 $h = \sqrt{300}$   
 $h = 10\sqrt{3}$

**R: A)  $10\sqrt{3}$  cm**

R: a)  $10\sqrt{3}$ cm

2.

②  $V = \frac{1}{3} \pi r^2 \cdot h \rightarrow 64\pi = \frac{1}{3} \pi r^2 \cdot 12 \rightarrow r^2 = \frac{64}{4} \rightarrow r = 4$

$g^2 = r^2 + h^2 \rightarrow g^2 = 4^2 + 12^2 \rightarrow g = \sqrt{160} \rightarrow g = 4\sqrt{10}$

**R: B)  $4\sqrt{10}$**

R: b)  $4\sqrt{10}$

3.

$$\begin{aligned}
 \textcircled{3} \quad A_{\text{base}} &= \pi r^2 & V &= \frac{1}{3} \pi r^2 \cdot h \\
 36\pi &= \pi r^2 & & \\
 r &= \sqrt{36} & V &= \frac{1}{3} \pi \cdot 6^2 \cdot 6 \\
 r &= 6 = h & & \\
 & & V &= \pi \cdot 36 \cdot 2 \\
 & & V &= 72\pi
 \end{aligned}$$

R: A |  $72\pi$

R: a)  $72\pi$

4.

$$\begin{aligned}
 \textcircled{4} \quad V &= 2 \cdot V_{\text{cone}} \rightarrow V = 2 \cdot \left( \frac{1}{3} \cdot \pi r^2 \cdot h \right) \\
 & & V &= 2 \cdot \left( \frac{1}{3} \cdot \pi \cdot 1^2 \cdot 1 \right) \\
 & & V &= \frac{2\pi}{3}
 \end{aligned}$$

R: E |  $\frac{2\pi}{3}$

R: e)  $\frac{2\pi}{3}$

5.

$$\begin{aligned}
 \textcircled{5} \quad V_{\text{cilindro}} &= \pi r^2 \cdot h \rightarrow \pi \cdot 3^2 \cdot 10 = 90\pi \\
 V_{\text{cone}} &= \frac{1}{3} \pi r^2 \cdot h \rightarrow \frac{1}{3} \pi \cdot 1^2 \cdot 3 = 1\pi \\
 \frac{1}{2} V_{\text{cilindro}} - V_{\text{cone}} &= 45\pi - 1\pi = 44\pi
 \end{aligned}$$

R: E |  $44\pi$

R: e)  $44\pi$

6.

$$\textcircled{6} \frac{V_{\text{prisma}}}{V_{\text{cone}}} = \frac{(2\pi r^2 \cdot h) / 3}{(\pi r^2 \cdot h) / 3} = \frac{2\pi r^2 \cdot h}{\pi r^2 \cdot h} = 2$$

**R: A) 2**

R: a) 2

7.

$$\textcircled{7} \frac{V_{ABC}}{V_{\text{cilindro}} - V_{ABC}} = \frac{1/3 \pi r^2 \cdot h}{\pi r^2 \cdot h - 1/3 \pi r^2 \cdot h} = \frac{(\pi r^2 h) / 3}{3\pi^2 h - \pi r^2 h} = \frac{\pi r^2 h \cdot 3}{2\pi r^2 h} = \frac{1}{2}$$

**R: E)  $\frac{1}{2}$**

R: e)  $\frac{1}{2}$

Troncos:

1.

$$\textcircled{1} V_{\text{cone}} = \frac{1}{3} \pi r^2 \cdot h \rightarrow V_{\text{cone}} = \frac{1}{3} \pi \cdot 3^2 \cdot 8 = \frac{1}{3} \pi \cdot 8 \cdot 8 = \pi \cdot 3 \cdot 8 = 24\pi \text{ cm}^3$$

$$\frac{V}{v} = \frac{H^3}{h^3} \rightarrow \frac{24\pi}{12\pi} \times \frac{8^3}{h^3} \rightarrow 2 = \frac{512}{h^3} \rightarrow h = \sqrt[3]{256}$$

$$h = 4\sqrt[3]{4}$$

**R: E)  $4\sqrt[3]{4} \text{ cm}$**

R: e)  $4\sqrt[3]{4} \text{ cm}$

2.

$$\textcircled{2} \frac{V_{\text{variate}}}{V_{\text{cubo}}} = \left(\frac{16}{20}\right)^3 = \left(\frac{4}{5}\right)^3 = \frac{64}{125} \rightarrow V_{\text{variate}} = \frac{64}{125} V_{\text{cubo}}$$

$$V_{\text{cubo}} = V_{\text{variate}} + V_{\text{espuma}} \rightarrow V_{\text{cubo}} = \frac{64}{125} V_{\text{cubo}} + V_{\text{espuma}}$$

$$V_{\text{espuma}} = \frac{61V}{125} \cong 0,488V \cong 48\% \quad \text{R: } < 50\%$$

R: c) 50%

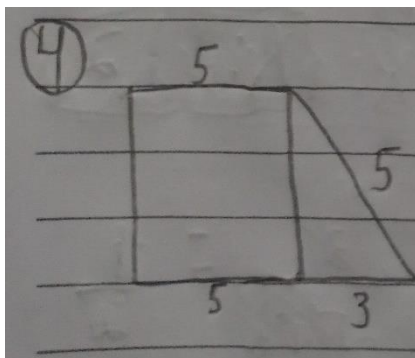
3.

$$\textcircled{3} \frac{1}{2} \frac{V_I}{V_I} = \left(\frac{h}{H}\right)^3 = \sqrt[3]{\frac{1}{2}} = \frac{h}{H} \rightarrow \frac{1}{\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2^2}}{\sqrt[3]{2^2}} = \frac{\sqrt[3]{4}}{2} \rightarrow h = H \frac{\sqrt[3]{4}}{2}$$

$$\text{R: } \frac{h \sqrt[3]{4}}{2}$$

$$\text{R: } \frac{h \sqrt[3]{4}}{2}$$

4.



$$\textcircled{4} \quad 5^2 = 3^2 + h^2$$

$$25 = 9 + h^2$$

$$h = \sqrt{16}$$

$$h = 4 \text{ cm} \quad \text{R: } 4 \text{ cm}$$

R: 4cm

5.

$$\begin{aligned}
 \textcircled{5} \quad AI &= AB + A_{\text{ext}} + A_{\text{int}} = \pi R^2 + \pi r^2 + \frac{(2\pi r + 2\pi R) \cdot g}{2} \rightarrow \\
 &\rightarrow 25\pi + 4\pi + \frac{(10\pi + 4\pi) \cdot 5}{2} \rightarrow 29\pi + 35\pi = \boxed{64\pi \text{ m}^2} \\
 VI &= \frac{\pi h}{2} \cdot (R^2 + Rr + r^2) \rightarrow \frac{\pi \cdot 4}{3} \cdot (25 + 10 + 4) = \boxed{52\pi \text{ cm}^3} \\
 R: A &= 64\pi \text{ m}^2 \text{ e } V = 52\pi \text{ cm}^3
 \end{aligned}$$

R: Área total:  $64\pi \text{ m}^2$  || Volume:  $52\pi \text{ cm}^3$

6.

$$\begin{aligned}
 \textcircled{6} \quad & \begin{array}{c} 3 \\ 3 \end{array} \quad \begin{array}{c} 3 \\ 3 \end{array} \quad \begin{array}{c} 5 \\ 4 \end{array} \\
 & 5^2 = 4^2 + h^2 \\
 & h = \sqrt{9} \\
 & h = 3 \\
 & VI = \pi (49 + 21 + 9) \\
 & VI = 79\pi \\
 R: & \boxed{0) 79\pi}
 \end{aligned}$$

R: d)  $79\pi$



7.

$$\begin{aligned} \textcircled{7} \quad \frac{R}{H} &= \frac{r}{h} \rightarrow r = \frac{R \cdot h}{H} & V_{\text{cone}} &= \frac{\pi R^2 H}{3} \\ V_{\text{cone}} &= \frac{\pi r^2 h}{3} = \frac{\pi \left(\frac{R \cdot h}{H}\right)^2 \cdot h}{3} = \frac{\pi R^2 h^3}{3 H^2} \\ V_{\text{truncated}} &= V - v = \frac{\pi R^2 H}{3} - \frac{\pi R^2 h^3}{3 H^2} = \frac{\pi R^2 (H^3 - h^3)}{3 H^2} \\ R^3 &= H^3 - h^3 \rightarrow 2h^3 = H^3 \rightarrow h^3 = \frac{H^3}{2} \rightarrow h = \frac{\sqrt[3]{H^3}}{\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2^2}}{\sqrt[3]{2^2}} \rightarrow \\ &\rightarrow h = \frac{H \sqrt[3]{4}}{2} \quad \text{(R: A) } h = \frac{H \sqrt[3]{4}}{2} \end{aligned}$$

R: a)  $h = \frac{H \sqrt[3]{4}}{2}$