

CONES E TRONCOS

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Lista de exercícios - cones

1. $\text{raio da base} = \sqrt{r^2 + h^2}$

$r = 10 \rightarrow r^2 = 100$

$h = 10 \rightarrow h^2 = 100$

$r^2 + h^2 = 100 + 100$

$r^2 = 200$

$r = \sqrt{200} \rightarrow r = 10\sqrt{2}$

$\text{área lateral (A)} = \pi r l$

$\text{área da base (B)} = \pi r^2$

$\text{área total (T)} = \pi r l + \pi r^2$

2. $\text{raio da base} = \sqrt{r^2 + h^2}$

$r^2 + h^2 = 10^2 + 10^2$

$10^2 + h^2 = 100$

$h^2 = 100 - 100$

$h^2 = 0$

$h = \sqrt{0} \rightarrow h = 0$

$\text{área lateral (A)} = \pi r l$

$\text{área da base (B)} = \pi r^2$

$\text{área total (T)} = \pi r l + \pi r^2$

$\text{raio da base} = \sqrt{r^2 + h^2}$

$r^2 + h^2 = 16^2 + 12^2$

$16^2 + h^2 = 256$

$h^2 = 256 - 256$

$h^2 = 0$

$h = \sqrt{0} \rightarrow h = 0$

$\text{área lateral (A)} = \pi r l$

$\text{área da base (B)} = \pi r^2$

$\text{área total (T)} = \pi r l + \pi r^2$

$$3 \text{. A base } 25^{\circ} \text{ and } 120^{\circ} \text{, height } 3$$

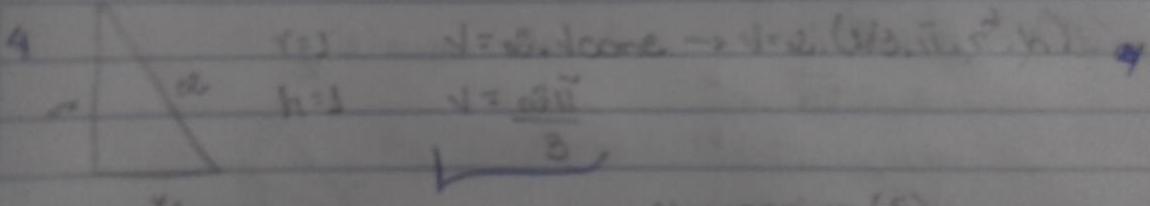
$$25^{\circ}/2/1^{\circ} \quad 3$$

$$1^{\circ} = 36 \quad 45^{\circ} \text{, } 75^{\circ}, 60^{\circ}$$

$$\boxed{25 - 25 = 0} \quad 3$$

$$1 = 25 - 25 = 0$$

4.7.2.ii Alternative (A),



Alternative (E),

$$5. \text{ A base } 25^{\circ} \text{ and } 120^{\circ} \text{, height } 3$$

$$120^{\circ}/2/1^{\circ} \quad 3$$

$$120^{\circ}/2/1^{\circ} \quad 3$$

angle between base - to vertex

$$120^{\circ} - 25^{\circ} = 95^{\circ} \text{, alternative,}$$

$$6. \text{ A base } 25^{\circ} \text{ and } 120^{\circ} \text{, height } 3$$

$$\frac{120^{\circ}}{2} = 60^{\circ} \quad \frac{25^{\circ}}{2} = 12.5^{\circ}$$

6. Alternative (A)

$$7. \text{ A base } \frac{25^{\circ}}{2} = 12.5^{\circ} \text{ and } 120^{\circ} \text{, height } \frac{3}{2}$$

$$\frac{25^{\circ}}{2} = 12.5^{\circ} \text{ and } 120^{\circ}$$

$$\frac{3}{2} = 1.5 \quad \text{Alternative (E),}$$

Lista de ejercicio - troncos

$$1. \text{ Vcorte} = \frac{1}{3} \pi r^2 h = \frac{1}{3} \pi \frac{H^3}{h^2} \rightarrow \frac{24\pi + 3\pi^2}{3h^2} \rightarrow \\ = \frac{1}{3} \pi \frac{3^3}{h^2} = \frac{27\pi}{h^2} \rightarrow h = \sqrt[3]{1000} \rightarrow \\ = \frac{1}{3} \pi \cdot 27 \\ = 27\pi \text{ cm}^3 \\ \rightarrow \text{carga límite}$$

$$2. \frac{\text{Vcorte}}{\text{Vcarga}} = \frac{\left(\frac{36}{20}\right)^3}{\left(\frac{4}{2}\right)^3} = \frac{64}{125} \rightarrow \text{carga límite} = \frac{64}{125} \text{ tona}$$

$$\frac{\text{Vcorte}}{\text{Vcarga}} = \frac{\text{Vcorte}}{\text{Vcarga} + \text{Vespuma}} \\ \frac{\text{Vcorte}}{\text{Vcarga}} = \frac{64}{125} \frac{\text{Vcorte}}{\text{Vcarga} + \text{Vespuma}}$$

$$\text{Vespuma} = \frac{64}{125} \approx 0,43 \rightarrow 0,5 \\ \rightarrow 50\% \text{ atmósfera(S)}$$

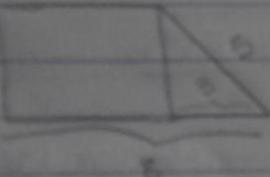
$$3. \frac{3/4 \cdot \sqrt[3]{4}}{H} \cdot \left(\frac{h}{H}\right)^3 = \sqrt[3]{\frac{1}{8}} = \frac{h}{H} \\ \frac{1}{8} \cdot \frac{\sqrt[3]{4^2}}{H^2} = \frac{\sqrt[3]{4}}{H^3} \rightarrow h = H \sqrt[3]{4}$$

$$\text{Volumen} = \frac{\pi \cdot r^3}{3} = 0,43 \cdot 1 = 0,5$$

$L > 50\% \text{ Abnutzung}$

$$3. \frac{1}{3} \cdot \frac{\pi \cdot 16}{3} \cdot \left(\frac{h}{H}\right)^3 = \sqrt[3]{\frac{1}{27}} \cdot \frac{\pi \cdot h}{H}$$

$$\frac{1}{3} \cdot \frac{\pi \cdot 2^2}{3} \cdot \frac{h^3}{H^3} \rightarrow h = H \sqrt[3]{\frac{4}{3}}$$

$$4.$$


$$5^2 = 3^2 + h^2 \quad \rightarrow \quad h = \sqrt{16}$$

$$25 = 9 + h^2 \quad \rightarrow \quad h = 4 \text{ cm}$$

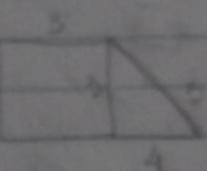
$$h^2 = 16$$

$$5. \text{ Fläche} = AB + BB' + B'L = \underline{(2 \cdot 4) + (2 \cdot 4) + (2 \cdot 4)} \cdot 2$$

$$= 40 \text{ m} + 4 \cdot 4 + (10 \text{ m} + 4 \text{ m}) \cdot 2$$

$$= 48 \text{ m} + 32 \text{ m} = 80 \text{ m}^2$$

$$\sqrt{t} = \frac{\pi \cdot h}{4} \cdot (R^2 + R \cdot r^2) + \frac{\pi \cdot 4}{3} \cdot (20 + 10 \cdot 4) = \underline{20 \text{ m}^2}$$

$$6.$$


$$\sqrt{t} = \pi \cdot \frac{h}{4} \cdot (49 + 119)$$

$$= 79 \text{ m}^2 \quad \text{Antwort: (v)}$$

$$7. \frac{R - r}{H} \cdot \frac{r}{h} \rightarrow r = \frac{rh}{H} \quad \text{Volumen} = \frac{\pi r^2 H}{3}$$

$$\frac{\pi R^2 h}{3} \rightarrow r = Rh \quad V_{cyl} = \frac{\pi R^2 h}{3}$$

$$4\pi \frac{\pi R^2 h}{3} \rightarrow \frac{4\pi}{3} \left(\frac{\pi R^2 h}{3} \right)^2 \cdot h \rightarrow \frac{16\pi^3 h^5}{27 R^2}$$

$$\frac{16\pi^2 h}{3} - \frac{16\pi^2 h^3}{27 R^2} \rightarrow \frac{16\pi^2 h^3}{27 R^2} - \frac{16\pi^2 h^5}{27 R^2}$$

$$\psi = \frac{16\pi^2}{3} (h^3 - h^5) \rightarrow \frac{16\pi^2 h^3}{3} = \frac{16\pi^2}{3} (h^3 - h^5)$$

$$\frac{16\pi^2 h^3}{3} = \frac{16\pi^2}{3} (h^3 - h^5) \rightarrow h^3 - h^5 = 16\pi^2 / (h^3 - h^5)$$

$$h = \sqrt[3]{H^3} \rightarrow h = H \cdot \sqrt[3]{\frac{1}{2}}$$

$$h = \sqrt[3]{\frac{1}{2}}$$

ALTERNATIVA (A) ✓

