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Disciplina: Matemática

IFSP - Câmpus Cubatão

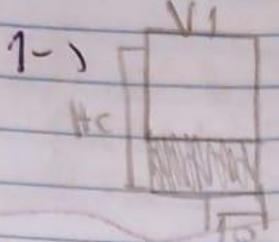
Tarefa Básica 04
Cilindros e Pirâmides
(Fotos nas páginas seguintes)

1ª Lista – Cilindros

Exercícios 1 e 2:

Exercício 4 - Cilindros / Prismas

Solução Básica - Cilindros



$$h_1 = 5,5 \text{ cm}$$

$$R_{\text{ext}} = 10,5 \text{ cm}$$

$$h_2 = 40 \text{ cm}$$

$$l = ?$$

$$V_1 = V_2$$

$$V_1 = A_{\text{base}} \cdot l$$

$$V_1 = \pi \cdot R^2 \cdot l$$

$$V_1 = \pi \cdot 10^2 \cdot \frac{1}{5} \cdot 40$$

$$V_1 = \pi \cdot 100 \cdot \frac{1}{5} \cdot 40$$

$$V_1 = \pi \cdot 20 \cdot 40$$

$$V_1 = 800\pi \text{ cm}^3$$

$$V_2 = A_{\text{base}} \cdot l$$

$$V_2 = \pi \cdot r^2 \cdot l$$

$$800\pi = \pi \cdot 5^2 \cdot l$$

$$800\pi = 25\pi l$$

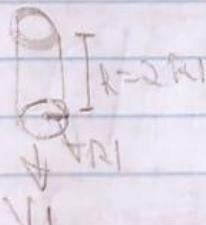
$$\cancel{\pi}$$

$$800 = 25l \quad \Rightarrow \boxed{l = 32 \text{ cm}}$$

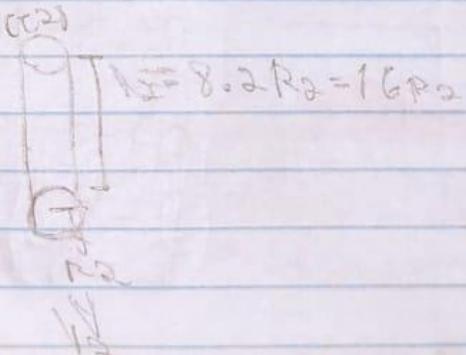
\rightarrow 2000 A.

$$l = \frac{800}{25} \Rightarrow \boxed{R = 32 \text{ cm/m}}$$

2-1 (a)



(b)



$$\frac{V_1}{V_2} = \frac{1}{27} \Rightarrow \frac{\pi \cdot (R_1)^2 \cdot l_1}{\pi \cdot (R_2)^2 \cdot l_2} = \frac{1}{27} \Rightarrow \frac{(R_1)^2 \cdot 2R_1}{(R_2)^2 \cdot 16R_2} = \frac{1}{27} \Rightarrow \dots$$

$$\therefore \frac{(R_1)^2 \cdot R_1 \cdot 2}{(R_2)^2 \cdot R_2 \cdot 16} = \frac{1}{27} \Rightarrow \frac{(R_1)^3}{(R_2)^3} \cdot \frac{1}{8} \cdot \frac{1}{27} \Rightarrow \frac{(R_1)^3}{(R_2)^3} = \frac{8}{27}$$

• •

D S T Q Q S S

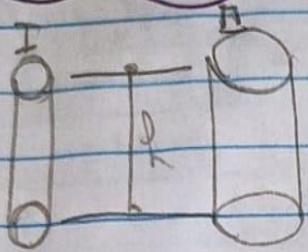
$$\left(\frac{R_1}{R_2}\right)^3 = \frac{8}{27} \Rightarrow R_1 = \sqrt[3]{\frac{8}{27}} \quad \begin{array}{r} 8 \\ 27 \\ \hline 1 \end{array} \quad \begin{array}{r} 27 \\ 9 \\ 3 \\ 1 \end{array}$$

Maximal - minimal $\frac{2}{3}$

$$\frac{R_1}{R_2} = \sqrt{\frac{2^3}{3^3}} \Rightarrow \boxed{\frac{R_1}{R_2} = \frac{2}{3}} \rightarrow \text{Zwischen E.}$$

Exercício 3:

3-1



$$VA = 16\pi$$

$$C_2 \cdot A_{lateral} = C_1 \cdot A_{total}$$

$$h = ?$$

$$C_2 \cdot A_{lateral} = C_1 \cdot A_{total}$$

$$2\pi R \cdot h = 2\pi R (r + 1)h$$

~~$$2\pi^3 R^3 h = 2\pi R (R+1)h$$~~

$$V = 16\pi$$

$$\pi r^2 \cdot h = 16\pi$$

~~$$R^2 \cdot h = 16\pi$$~~

~~$$3h = \frac{2\pi R(R+1)}{\pi R}$$~~

$$R^2 \cdot h = 16$$

$$R^2 \cdot 3R = 16$$

$$3R = 2(R+h)$$

$$R^2 \cdot R = 16$$

$$3R = 2R + 2h$$

$$R^3 = 8 \rightarrow 4|2$$

$$3h - 2h = 2R$$

$$R = \sqrt[3]{8}$$

$$R = \sqrt[3]{2^3} \rightarrow R = 2$$

$$h = 2R$$

$$h = 2R \rightarrow h = 2 \cdot 2$$

$$R = 4 \rightarrow \text{Sexta D}$$

Exercícios 4 e 5:

$$4-) V = \pi \cdot R^2 \cdot h$$

Comentário: O raio da base é a altura.

$$R = (R+12)^2 \quad | \quad h = (4+12)$$

$$\pi \cdot R^2 \cdot h = \pi \cdot R^2 \cdot h$$

$$\pi (R+12)^2 \cdot 4 = \pi \cdot R^2 (4+12)$$

$$\pi (R^2 + 24R + 144) \cdot 4 = \pi \cdot R^2 \cdot 16$$

$$\cancel{\pi} (4R^2 + 96R + 576) = \cancel{\pi} R^2 \cdot 16$$

$$4R^2 + 96R + 576 = 16R^2$$

$$4R^2 - 16R^2 + 96R + 576 = 0$$

$$-12R^2 + 96R + 576 = 0 \quad (= -1)$$

$$12R^2 - 96R - 576 = 0 \quad (= 12)$$

$$R^2 - 8R - 48 = 0$$

$$A \quad B \quad C$$

$$\frac{-4 + 12}{-4} = 8$$

$$\frac{12}{-4} = -12$$

$$R \quad R'$$

\rightarrow Sétima A.

$$V = \pi R^2 h \quad \boxed{R = 12 \text{ cm}}$$

\rightarrow Comentário

$$5-) R_1 = 20 \text{ cm} \quad | \quad 0,8 \text{ mm} = 0,08 \text{ cm}$$

$$\pi = 3,14$$



$$VP = V_d$$

$$VP = 32\pi$$

$$VP = 32 \cdot 3,14$$

$$VP = 100,48 \text{ cm}^3$$

$$\boxed{NP \approx 100,5 \text{ cm}^3}$$

$$V_d = \pi \cdot R^2 \cdot h$$

$$V_d = \pi \cdot (20)^2 \cdot 0,08$$

$$V_d = \pi \cdot 400 \cdot 0,08$$

$$\boxed{V_d = 32\pi}$$

\rightarrow Sétima B.

2^a Lista – Pirâmides

Exercícios 1 e 2:

Sonja Bräuer - Parimittler

$$\begin{aligned} \text{1-)} \quad a &= x \text{ cm} & t &= 8 \text{ cm} \\ b &= 8 \text{ cm} & V &= 48 \text{ cm}^3 \end{aligned}$$

$$V = \frac{1}{3} \cdot V_{\text{prisma}} \Rightarrow V = \frac{1}{3} \cdot \text{A}_{\text{Basis}} \cdot h \Rightarrow V = \frac{1}{3} \cdot ab \cdot h \quad ;$$

$$\therefore 48 = 1_3 \cdot x \cdot 2x \cdot 8 \Rightarrow 48 \cdot 3 = 1 \cdot 2 \cdot x^2 \cdot 8 \Rightarrow 144 = 2x^2 \cdot 8 \therefore$$

$$\therefore 144 = 16x^2 \Rightarrow \frac{144}{16} = x^2 \Rightarrow x^2 = 9 \Rightarrow x = \sqrt{9}$$

$$X = 35 \text{ m}$$

$$2-1 \quad bl = 80 \text{ mm} \quad | \quad Ahoy! = ? \quad | \quad a = 40 \text{ mm} \quad | \quad A_{\text{total}} \\ f = 30 \text{ mm} \quad | \quad \quad \quad \quad | \quad \quad \quad | \quad A = ?$$

$$Atotal = Abase + A lateral$$

$$\text{Círculo da base} \quad A = \pi r^2 \quad A = \pi \cdot 2^2 = 12,57 \text{ mm}^2$$

$$A^2 = 30^2 + 40^2$$

$$A^2 = 900 + 1600$$

$$A = \sqrt{2500}$$

$$A = 50$$

$$M_{\text{ext}} = 4 \lambda = \underline{\text{H.D.A}}$$

$$\text{Alatual} = \underline{X \cdot 80.50} = 8.80.50$$

$$A_{bottom} = 8000 \text{ mm}^2$$

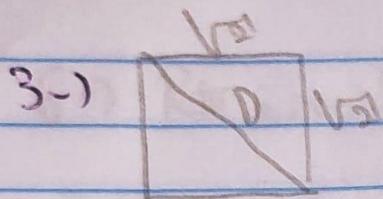
$$A_{\text{total}} = A_{\text{long}} + A_{\text{lateral}}$$

$$\text{Atotal} = 6400 + 8000$$

Total = 14.400 ~~for 3th B.~~

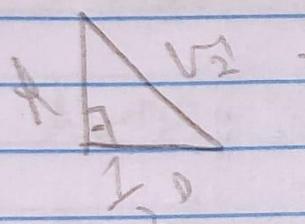
Exercício 3:

D S T Q Q S S



$$D = \sqrt{1+1}$$

$$D = \sqrt{2} \cdot \sqrt{2} \Rightarrow D = 2$$



$$(\sqrt{2})^2 = h^2 + 1^2$$

$$2 = h^2 + 1$$

$$h^2 = 1$$

$$h = \sqrt{1} \Rightarrow$$

$$h = 1 \text{ cm}$$

↳ 3etra c.

Exercícios 4 e 5:

$$4 \rightarrow \text{AretoBord} = a \text{ cm} \quad | \quad V = ? \\ d = 6\sqrt{3} \text{ cm}$$

$$\text{Altura} = \frac{3d^2\sqrt{3}}{2} \Rightarrow \boxed{\text{Altura} = \frac{3a^2\sqrt{3}}{2}}$$

$$V = \lambda_3 \cdot \text{Volume} \Rightarrow V = \lambda_3 \cdot \text{Altura} \cdot d \Rightarrow :$$

$$\therefore V = \frac{1}{3} \cdot \frac{3a^2\sqrt{3}}{2} \cdot 6\sqrt{3} \Rightarrow V = \frac{3a^2\sqrt{3}\sqrt{3}b}{3 \cdot 2} \therefore$$

$$\therefore V = \frac{3a^2 b}{3 \cdot 2} \Rightarrow \boxed{V = \frac{3a^2 b}{2} \text{ cm}^3} \quad \text{Dobra A.}$$

$$5 \rightarrow \text{AretoBord} = \text{dado} = 4 \text{ cm} \quad | \quad d = 6\sqrt{3} \text{ cm} \quad | \quad V = ?$$

$$V = \lambda_3 \cdot \text{Volume}$$

$$V = \lambda_3 \cdot \text{Altura} \cdot d \rightarrow$$

$$V = \lambda_3 \cdot 24\sqrt{3} \cdot 6\sqrt{3}$$

$$V = \frac{24 \cdot 6\sqrt{3} \sqrt{3}}{3}$$

$$V = \frac{24 \cdot 6 \cdot 8}{3}$$

$$\text{Altura} = \frac{3d^2\sqrt{3}}{2}$$

$$\text{Altura} = \frac{3 \cdot 4^2\sqrt{3}}{2}$$

$$\text{Altura} = 3 \cdot 16\sqrt{3}$$

$$\text{Altura} = 24\sqrt{3} \text{ cm}^2$$

$$V = 24 \cdot 6 \Rightarrow \boxed{V = 144 \text{ cm}^3} \quad \text{Dobra A.}$$

Dobra A.

Exercícios 6 e 7:

6-) Perímetro = 6 cm | h = 8 cm

C-8

$$2\text{flecha} = \frac{6}{6} \Rightarrow 2\text{flecha} = 1\text{cm}$$

$$\text{Ab}\varnothing l = \frac{3l^2 \sqrt{3}}{2}$$

$$\text{Ab}\varnothing l = \frac{3 \cdot 1^2 \sqrt{3}}{2}$$

$$\text{Ab}\varnothing l = \frac{3\sqrt{3}}{2}$$

$$V = \frac{1}{3} \cdot V_{\text{prisma}}$$

$$V = \frac{1}{3} \cdot \text{Ab}\varnothing l \cdot h$$

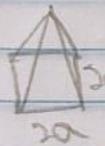
$$V = \frac{1}{3} \cdot \frac{3\sqrt{3}}{2} \cdot 8$$

$$V = \frac{1 \cdot 8 \cdot \frac{3\sqrt{3}}{2}}{3 \cdot 2} \Rightarrow V = 4\sqrt{3} \text{ cm}^3$$

→ errata.

$$V = 4\sqrt{3} \text{ cm}^3$$

7)



$$V_{\text{prin}} = V_{\text{prisma}}$$



$$V_{\text{prisma}} = A\text{base} \cdot h_{\text{prisma}}$$

$$A\text{base} = l^2 \cdot h_{\text{prisma}}$$

$$V_{\text{prisma}} = a^2 \cdot h_{\text{prisma}}$$

$$V_{\text{prin}} = \frac{1}{3} \cdot V_{\text{prisma}}$$

$$V_{\text{prin}} = \frac{1}{3} \cdot \text{Ab}\varnothing l \cdot h_{\text{prin}}$$

$$V_{\text{prin}} = \frac{1}{3} \cdot l^2 \cdot h_{\text{prin}}$$

$$V_{\text{prin}} = \frac{1}{3} \cdot (2a)^2 \cdot h_{\text{prin}}$$

$$V_{\text{prin}} = \frac{4a^2}{3} \cdot h_{\text{prin}}$$

3

$$\Rightarrow V_{\text{prin}} = V_{\text{prisma}}$$

$$\frac{4a^2 \cdot h_{\text{prin}}}{3} = a^2 \cdot h_{\text{prisma}}$$

$$4a^2 \cdot h_{\text{prin}} = 3a^2 \cdot h_{\text{prisma}}$$

$$\frac{h_{\text{prin}}}{h_{\text{prisma}}} = \frac{3a^2}{4a^2} \Rightarrow$$

$$\frac{h_{\text{prin}}}{h_{\text{prisma}}} = \frac{3}{4}$$

→ Letra A

Exercício 8:

D S T Q Q S S

$$8 \rightarrow G_{\text{total}} = l^2 \sqrt{3} \quad | \quad h = ?$$

$$6\sqrt{3} = l^2 \sqrt{3} \quad \Rightarrow \quad l^2 = 6 \Rightarrow l = \sqrt{6}$$

$$\frac{6\sqrt{3}}{\sqrt{3}} = l^2$$

$$h = \frac{l\sqrt{6}}{3} \quad \Rightarrow \quad h = \frac{\sqrt{6} \cdot \sqrt{6}}{3} \Rightarrow h = \frac{\sqrt{36}}{3} \Rightarrow h = \frac{6}{3} \therefore$$

$$\therefore h = 2 \text{ cm} \quad \text{m Sobre A.}$$