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Disciplina: Matemática

IFSP - Câmpus Cubatão

Tarefa Básica 06

Esfera e Suas Partes - Inscrição e Circunscrição de Sólidos

(Fotos nas páginas seguintes)

1ª Lista – Esfera e Suas Partes

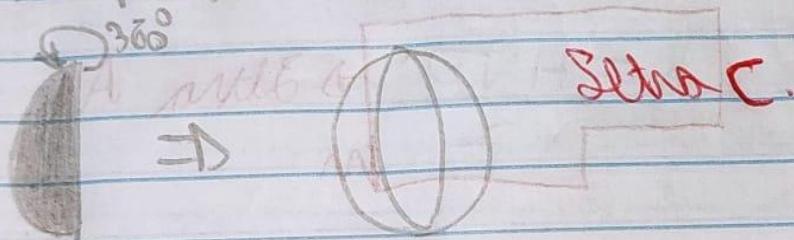
Exercícios 1 e 2:

Matríria 6 → Esfera e suas partes - Introdução à Circunferência de sólidos

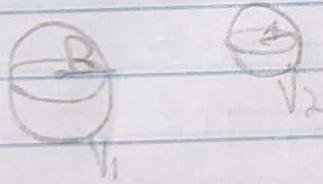
Soma Básica - Esfera e suas partes

1-) Rotação de um semi-círculo em torno de seu diâmetro.

Exemplificando:



2-)



$$V_1 = V_2 \cdot 1000000$$

$$\frac{4}{3}\pi \cdot R^3 = \frac{4}{3}\pi \cdot r^3 \cdot 1000000$$

$$\frac{4}{3}\pi \cdot R^3 = \frac{4}{3}\pi \cdot 1 \cdot 1000000$$

$$R^3 = 1000000$$

$$R = \sqrt[3]{1000000} \Rightarrow R = \sqrt[3]{10^6}$$

$$R = 10^2$$

$$R = 100 \text{ m}$$

Exercícios 3, 4 e 5:

D S T Q Q S S

3-1

$$V_C = \frac{4\pi R^3}{3}$$

$$V_C = \pi(2R)^2 \cdot h$$

$$V_C = \pi(2R)^2 \cdot 4R$$

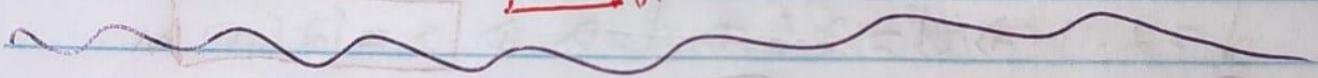
$$\frac{4\pi R^3}{3}$$

$$\pi(2R)^2 \cdot 4R$$

$$\frac{4\pi R^3}{3}$$

$$\pi(2R)^2 \cdot 1R$$

$$\therefore \frac{4R^3}{48R^3} \Rightarrow \frac{1}{12} \rightarrow \text{Sílula E.}$$



4-) $V_{\text{cilindro}} = V_{\text{verd}} + V_{\text{sol}} \quad (12\pi = \pi \cdot r^2 \cdot h)$

$$V_{\text{cilindro}} = \frac{4}{3}\pi \cdot R^3 + \frac{4}{3}\pi \cdot R^3 \quad 12\pi = \pi \cdot r^2 \cdot 3$$

$$= \frac{4}{3}\pi \cdot r^3 + \frac{4}{3}\pi \cdot r^3 \quad 12\pi = r^2$$

$$= \frac{4}{3}\pi \cdot r^3 + \frac{4}{3}\pi \cdot 8$$

$$= \frac{4}{3}\pi \cdot r^3 + \frac{32}{3}\pi$$

$$= \frac{4}{3}\pi \cdot r^3 + \frac{32}{3}\pi$$

$$\frac{32}{3}\pi$$

$$r^2 = 4$$

$$r = \sqrt{4} = 2$$

\uparrow Sílula B
 $r = 2$

$$V_{\text{cilindro}} = \frac{36\pi}{3} \Rightarrow [12\pi]$$

5-)  $V_{\text{cilindro}} = \pi \cdot 6^2 \cdot 1 = 36\pi$

$$V_{\text{verd}} = 36\pi$$

$$\frac{4}{3}\pi \cdot r^3 = 36\pi$$

$$4\pi \cdot r^3 = 36\pi \cdot 3$$

$$4\pi \cdot r^3 = 108\pi$$

$$r^3 = \frac{108\pi}{4\pi}$$

$$r^3 = 27$$

$$r = 3$$

$\therefore r^3 = 27 \Rightarrow r = \sqrt[3]{27} \Rightarrow r = \sqrt[3]{3^3} \Rightarrow r = 3 \text{ cm}$

Exercícios 6 e 7:

D S T Q Q S S

$$6-1 \text{ Vespuna} = 288\pi \text{ cm}^3 \quad | a = d = 2r \Rightarrow r = 12 \text{ cm}$$

$$288\pi = \frac{4}{3}\pi \cdot r^3 \quad | \boxed{r^3 = 216}$$

$$3 \cdot 288\pi = 4\pi \cdot r^3 \quad | \boxed{r = \sqrt[3]{216}}$$

$$864\pi = 4\pi \cdot r^3 \quad | \boxed{r = \sqrt[3]{6^3}}$$

$$\cancel{r^3 = 864\pi} \Rightarrow r^3 = 864 \quad | \boxed{r = 12 \text{ cm}}$$

\rightarrow Lata E.

$$d = 2 \cdot r \Rightarrow d = 2 \cdot 6 \Rightarrow d = a \Rightarrow a = 12 \text{ cm}$$

$$7-1 \quad \text{Volumen} = A \cdot h \quad \text{Volumen} = \frac{4}{3}\pi \cdot r^3$$

$$\text{Volumen} = \pi \cdot r^2 \cdot h \quad | \boxed{R = \frac{d}{2}} \quad | \boxed{r = 2 \text{ cm}}$$

$$= \pi \cdot 10^2 \cdot 16 \quad | \boxed{R = 10 \text{ cm}}$$

$$\begin{aligned} \text{Volumen} &= A \cdot h \quad \text{Volumen} = \frac{4}{3}\pi \cdot r^3 \\ \text{Volumen} &= \pi \cdot r^2 \cdot h \\ &= \pi \cdot 10^2 \cdot 16 \\ &= \pi \cdot 100 \cdot 16 \quad | \boxed{\text{Volumen} = 32\pi} \end{aligned}$$

$$\text{Volumen} = 1600\pi$$

$$\frac{\text{Quantidade}}{\text{Lata}} = \frac{\text{Volumen}}{\text{Volumen}} = \frac{1600\pi}{32\pi} \Rightarrow \frac{1600\pi}{32\pi} = \frac{4800}{32} ;$$

$$\therefore 4800 = 150$$

\rightarrow Lata D

Exercício 8:

D	S	T	Q	Q	S	S
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$$8-7 \quad \frac{4\pi R^3}{3} = \pi R^2 \cdot H = \frac{\pi R^2 \cdot 2R}{3} \text{ (verif)}$$

$$\frac{4}{3}R = RH = \frac{H}{3} \rightarrow \frac{2R}{3} = H = \frac{R}{3}$$

$$2R = 3H = \frac{R}{8}$$

$$2R = 3H = R$$

$$2R = R = 3H$$

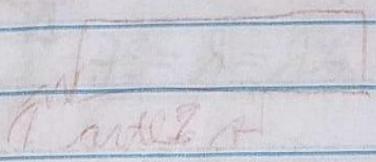
\rightarrow Sétima)

2ª Lista – Inscrição e Circunscrição de Sólidos

Exercícios 1 e 2:

Solfa Básica - Inscrição e Circunscrição de Sólidos

1-) não consegui fazer



2-) A(superfície sólido) = $\frac{4\pi \cdot r^2}{6a^2} = \frac{4\pi (2a)^2}{6a^2} = \dots$
A(área circundante)

$$\therefore \frac{\pi r^2}{6a^2} = \frac{\pi d}{6a} \Rightarrow \boxed{\frac{\pi}{6}} \text{ m} \rightarrow \text{área A.}$$

Exercícios 3 e 4:

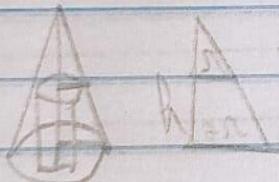
$$3.1 \quad R = \frac{d}{2} \quad V_E = \frac{\pi r^2 h}{3} = \frac{\pi}{3} \left(\frac{9\sqrt{3}}{2} \right)^2 \cdot \frac{9^3}{2}$$

$$R = \frac{9\sqrt{3}}{2}$$

$$V_E = \frac{4\pi}{3} \cdot \frac{3\sqrt{3}}{8} = \frac{12\sqrt{3}\pi}{24} \Rightarrow \boxed{\frac{\sqrt{3}\pi}{2}}$$

Letra A

$$4.1 \quad H = 12 \quad R = 3$$



$$2r = 12$$

$$r = 6$$

$$3.2 \quad 8 = 12(3 - r)$$

$$6r = 36 - 12r$$

$$6r + 12r = 36$$

$$18r = 36$$

$$r = \frac{36}{18}$$

$$\boxed{r = 2}$$

$$V_{cilindro} = \pi \cdot r^2 \cdot h$$

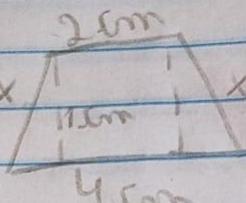
$$V_{cilindro} = \pi \cdot r^2 \cdot (2r)$$

$$V_{cilindro} = \pi \cdot 2^2 \cdot 2 \cdot 2$$

$$V_{cilindro} = \pi \cdot 4 \cdot 4$$

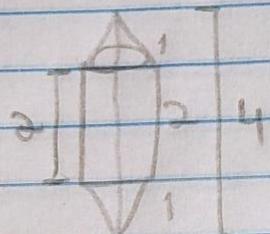
$$\boxed{V_{cilindro} = 16\pi \text{ m}^3}$$

Exercício 5:

5-7  \times $V_{\text{solidão}} = ?$

$$n=1$$

$$h=1$$



$$2 \cdot V_{\text{cone}} \rightarrow 2 \cdot \frac{1}{3} \cdot \pi \cdot 1^2 \cdot 1 \Rightarrow \frac{2}{3} \cdot \pi \cdot 1$$

($\frac{2}{3} \pi$)



$$R=1 \mid H=2$$

$$V_{\text{cylinder}} = \pi \cdot R^2 \cdot h \Rightarrow \pi \cdot 1^2 \cdot 2 = 2\pi$$

$$\begin{aligned} V_{\text{solidão remolhado}} &= \frac{1}{3} \pi + 2\pi \\ &= 4 \cdot \frac{2}{3} \pi \end{aligned}$$

$$V_{\text{solidão remolhado}} = \frac{8\pi}{3} \text{ mm}^3$$