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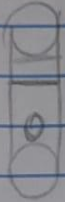
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4) $V_{cilindro} = V_{esf1} + V_{esf2}$
 $V_{cilindro} = \frac{4}{3}\pi r^3 + \frac{4}{3}\pi R^3$
 $V_{cilindro} = \frac{4}{3}\pi \cdot 1^3 + \frac{4}{3}\pi \cdot 2^3$
 $V_{cilindro} = \frac{4}{3}\pi + \frac{4}{3}\pi \cdot 8$
 $V_{cilindro} = \frac{4}{3}\pi + \frac{4 \cdot 8 \pi}{3}$
 $V_{cilindro} = \frac{4}{3}\pi + \frac{32\pi}{3}$
 $V_{cilindro} = \frac{36\pi}{3} \Rightarrow 12\pi$

$12\pi = \pi \cdot r^2 \cdot h$
 $12\pi = \pi \cdot r^2 \cdot 3$
 $12\pi = r^2 \cdot 3\pi$
 $r^2 = 4$
 $r = \sqrt{4}$
 $r = 2$

B

5) 

$V_{cilindro} = \pi r^2 \cdot h$
 $V_{cilindro} = \pi \cdot 6^2 \cdot 1$
 $V_{cilindro} = 36\pi$

$V_{esfera} = \frac{4}{3}\pi r^3$
 $\frac{4}{3}\pi r^3 = 36\pi$
 $4 \cdot \pi r^3 = 36\pi \cdot 3$
 $4\pi r^3 = 108\pi$
 $r^3 = \frac{108\pi}{4\pi}$
 $r^3 = 27$
 $r = \sqrt[3]{27}$
 $r = 3$

C

6) $V_{esfera} = 288\pi \text{ cm}^3$



$s = d = 2R$

$d = 2 \cdot R$

$d = 2 \cdot 6$

$d = 12 \text{ cm}$

$a = d$

$d = 12 \text{ cm}$

$288\pi = \frac{4}{3} \cdot \pi R^3$

$3 \cdot 288\pi = 4\pi R^3$

$864\pi = 4\pi R^3$

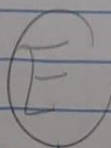
$R^3 = \frac{864\pi}{4\pi}$

$R^3 = 216$

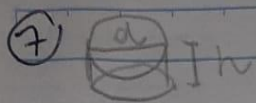
$R = \sqrt[3]{216}$

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

$R = 6 \text{ cm}$



E



7)

$$h = 16 \text{ cm}$$

$$d = 20 \text{ cm}$$

$$R = d/2$$

$$R = 10 \text{ cm}$$

$$r = 2 \text{ cm}$$

$$V_{\text{panela}} = \text{Base} \cdot h$$

$$V_{\text{panela}} = \pi \cdot R^2 \cdot h$$

$$V_{\text{panela}} = \pi \cdot 10^2 \cdot 16$$

$$V_{\text{panela}} = \pi \cdot 100 \cdot 16$$

$$V_{\text{panela}} = 1600\pi$$

$$V_{\text{bolinha}} = \frac{4}{3} \pi \cdot r^3$$

$$V_{\text{bolinha}} = \frac{4}{3} \pi \cdot 2^3$$

$$V_{\text{bolinha}} = \frac{4}{3} \pi \cdot 8$$

$$V_{\text{bolinha}} = \frac{32\pi}{3}$$

$$3$$

$$Q_{\text{total}} = V_{\text{panela}}$$

$$V_{\text{bolinha}}$$

$$Q_{\text{total}} = \frac{1600\pi}{32/3}$$

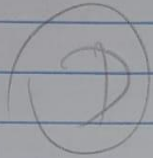
$$32/3$$

$$Q_{\text{total}} = \frac{1600\pi \cdot 3}{32}$$

$$32\pi$$

$$Q_{\text{total}} = 4800\pi/32$$

$$Q_{\text{total}} = 150$$



8) $\frac{4\pi R^2}{3}$

$$\frac{4\pi R^2}{3} = \pi R^2 \cdot H = \frac{\pi R^2 \cdot H}{1}$$

$$\frac{4\pi R^2}{3}$$

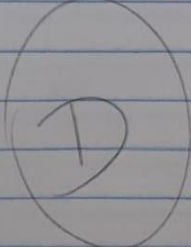
$$\frac{4\pi R^2}{3} = \pi R^2 \cdot H = \pi R^2 \cdot \frac{R}{3}$$

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

$$2R = 3H = 3R$$

$$2R = 3H = R$$

$$2R = R = 3H$$



Inscrição e Circunscrição de Sólidos

② $\frac{A_{\text{Superfície Esférica}}}{A_{\text{cubo circunscrito}}} = \frac{4\pi \cdot r^2}{6a}$

$\frac{A_{Se}}{A_{cc}} = \frac{4\pi \cdot (a/2)^2}{6a^2} \Rightarrow \frac{A_{Se}}{A_{cc}} = \frac{4\pi a^2}{6a^2}$

$\frac{A_{Se}}{A_{cc}} = \frac{\pi a^2}{6a^2} \Rightarrow \frac{A_{Se}}{A_{cc}} = \frac{\pi}{6}$

(A)

③ $R = \frac{d}{2} \Rightarrow R = \frac{a\sqrt{3}}{2}$

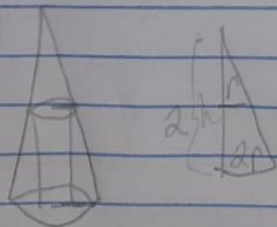
$\frac{V_{esfera}}{V_{cubo}} = \frac{4\pi R^3}{3a^3} \Rightarrow \frac{V_e}{V_c} = \frac{4\pi (a\sqrt{3}/2)^3}{3a^3}$

$\frac{V_e}{V_c} = \frac{4\pi a^3 \cdot 3\sqrt{3}}{8a^3} \Rightarrow \frac{V_e}{V_c} = \frac{12\sqrt{3}}{8}$

$\frac{V_e}{V_c} = \frac{\sqrt{3}}{2}$

(B)

(4)



$H = 12$
 $R = 3$

$r = \text{RAI o cilindro} = \text{alt cilindro} = 2r$

$\frac{2r}{(3-r)} = \frac{12}{3}$

$$32r = 12(3-r)$$

$$6r = 36 - 12r$$

$$6r + 12r = 36$$

$$18r = 36$$

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

$$r = 2$$

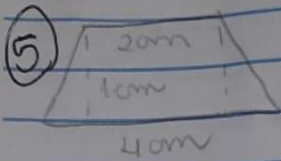
$$V_{cilindro} = \pi \cdot r^2 \cdot h$$

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

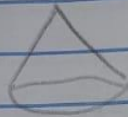
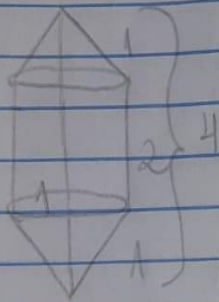
$$V_{cilindro} = \pi \cdot 2^2 \cdot 2.2$$

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

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

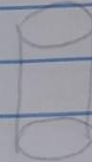


$V_{\text{solido Revolucao}} = ?$



$$r = 1$$

$$h = 1$$



$$r = 1$$

$$H = 2$$

$$2 \cdot V_{\text{cone}}$$

$$2 \cdot \frac{1}{3} \pi \cdot 1^2 \cdot 1$$

$$\frac{2 \cdot \pi \cdot 1 \cdot 1}{3}$$

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

$$V_{\text{cilindro}}$$

$$\pi \cdot r^2 \cdot H$$

$$\pi \cdot 1^2 \cdot 2$$

$$2\pi$$

$$V_{\text{solido Revolucao}} = \frac{2}{3} \pi + 2\pi$$

$$V_{\text{solido Revolucao}} = \frac{4 \cdot 2\pi}{3}$$

$$V_{\text{solido Revolucao}} = \frac{8\pi}{3} \text{ cm}^3$$