

Lista de Exercícios - Aula 30

Lista de Exercícios - Prismas

1-  $A_T = 80 \text{ m}^2 / \text{Altura} = 3 \text{ m} / A_{\text{do}} = ?$

$$\begin{aligned} A_T &= 2AB + AL \\ 80 &= 2l^2 + (4 \cdot 3 \cdot l) \\ 2l^2 + 12l - 80 &= 0 \\ \Delta &= b^2 - 4 \cdot a \cdot c \\ \Delta &= 12^2 - 4 \cdot 2 \cdot (-80) \\ \Delta &= 784 \end{aligned}$$

$$\left. \begin{aligned} l &= \frac{-b \pm \sqrt{\Delta}}{2 \cdot a} = \frac{-12 \pm 28}{4} \\ l_1 &= \frac{-12 + 28}{4} = \frac{16}{4} = l = 4 \text{ m} \\ l_2 &= \frac{-12 - 28}{4} = \frac{-40}{4} = l = -10 \text{ m} \end{aligned} \right\} \text{X não convém}$$

2-  $AB = 24\sqrt{3} \text{ cm}^2 / \text{Altura} = 2\sqrt{3} \text{ cm} / A_L = ?$

Prisma hexagonal regular:

$$\begin{aligned} AB &= \frac{6l^2\sqrt{3}}{4} \\ 24\sqrt{3} &= \frac{6l^2\sqrt{3}}{4} \\ 96 &= 6l^2 \end{aligned}$$

$$\left. \begin{aligned} l^2 &= \frac{96}{6} \\ l &= \sqrt{16} \\ l &= 4 \text{ cm} \end{aligned} \right\}$$

$$\begin{aligned} A_L &= 6 \cdot 4 \cdot 2\sqrt{3} \\ A_L &= 48\sqrt{3} \text{ cm}^2 \end{aligned}$$

3-  $\text{Altura} = \sqrt{3}$

$$\begin{aligned} \pi r &= 2 = l \\ A_T &=? \end{aligned}$$

Prisma reto  
hexagonal regular

$$AB = \frac{6 \cdot 2\sqrt{3}}{4}$$

$$A_B = \frac{6\sqrt{3}}{4}$$

$$A_L = 6 \cdot 2 \cdot \sqrt{3}$$

$$A_L = 12\sqrt{3}$$

$$A_T = 2AB + AL$$

$$A_T = 2 \cdot 6\sqrt{3} + 12\sqrt{3}$$

$$A_T = 12\sqrt{3} + 12\sqrt{3}$$

$$A_T = 24\sqrt{3}$$

Alternativa B

4 -

$B = 8 \cdot 5$

$b = 2$

$V = ?$

$A_B = \frac{(2+8) \cdot 5}{2} \cdot 3$  ab Acht

$A_B = 10 \cdot 3$

$A_B = 30$

$5^2 = 3^2 + h^2$

$25 = 9 + h^2$

$h^2 = 25 - 9$

$h = \sqrt{16}$

$h = 4$

$V = A_B \cdot S$

$V = 30 \cdot 5$

$V = 150 \text{ m}^3$

Alternative ①

5 -  $V = A_B \cdot h$

$V = A_D \cdot 50$

$V = 15 \cdot 50 \cdot 50$

$V = 750 \text{ cm}^3$

$V = 150 \cdot 5$

Alternative ②

6 - Altura:  $z = 2y$ ;  $A_T = 4x^2$  / Prismen quadrangular recto:  $A_B = x \cdot y$

$A_L = 2 \cdot (x \cdot 2y) + 2(y \cdot 2y)$

$A_L = 4xy + 4y^2$

$A_T = 2 \cdot AB + AL$

$4x^2 = 2xy + (4xy + 4y^2)$

$4x^2 = 6xy + 4y^2$

$4x^2 - 6xy - 4y^2 = 0$

$\Delta = (-6y)^2 - 4 \cdot 4 \cdot (-4y^2)$

$\Delta = 36y^2 + 64y^2$

$\Delta = 100y^2$

$x - \frac{(-6y) \pm \sqrt{100y^2}}{2 \cdot 4}$

$x = \frac{6y \pm 10y}{8}$

$x_1 = \frac{6y + 10y}{8} = \frac{16y}{8} \Rightarrow 2y$

$x_{II} = \frac{6y - 10y}{8} = \frac{-4y}{8} \times \text{não convém}$

$x = 2y$

$y = \frac{x}{2}$

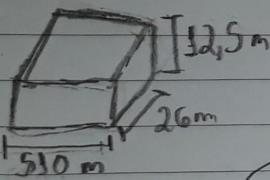
$AB = x \cdot \frac{x}{2}$

$V = \frac{x^2}{2} \cdot x = \frac{x^3}{2}$

$V = \frac{x^3}{2}$

Alternative ③

## Lista de Exercícios - Paralelepípedos e Cubos

1 - 

$$\left\{ \begin{array}{l} \text{Excesso} = 0,5 \text{ cm} \\ \text{Comprimento} = 53 - (2 \cdot 0,5) = 52 - 1 = 50 \text{ m} \\ \text{Largura} = 26 - (2 \cdot 0,5) = 26 - 1 = 25 \text{ m} \\ \text{Altura} = 12,5 - 0,5 = 12 \text{ m} \end{array} \right.$$

$$\rightarrow 50 \times 25 \times 12 \text{ cm}^3$$

$$V = 50 \cdot 25 \cdot 12$$

$$V = 15000 \text{ cm}^3 \rightarrow V = 0,015 \text{ m}^3$$

Alternativa A

2 -  $A_T = 72 \text{ m}^2$

$$\left\{ \begin{array}{l} 72 = 6a^2 \\ 6a^2 = 72 \\ a^2 = 12 \\ a = \sqrt{12} \rightarrow a = 2\sqrt{3} \text{ m} \end{array} \right.$$

$$\left\{ \begin{array}{l} D = \sqrt{3 \cdot a^2} \\ D = \sqrt{3 \cdot (2\sqrt{3})^2} \\ D = \sqrt{3 \cdot 12} \\ D = \sqrt{36} \rightarrow D = 6 \text{ m} \end{array} \right.$$

Alternativa B

3 -  $a = 50 \text{ m} \rightarrow \frac{50}{100} = 0,5 \text{ m}$

$$\left\{ \begin{array}{l} V = a^3 \\ V = 0,5^3 \\ V = 0,125 \text{ m}^3 \end{array} \right.$$

$$\rightarrow V = 0,125 \cdot 1000 \rightarrow V = 125 \text{ litros}$$

Alternativa A

4 - Aresta = 1m

$$\left\{ \begin{array}{l} V = a^3 \\ V = 1^3 \\ V = 1 \text{ m} \end{array} \right.$$

$$\left\{ \begin{array}{l} 1 \cdot 1000 \\ 1000 \text{ litros} \end{array} \right.$$

$$\left\{ \begin{array}{l} 1000 - 1 \\ 999 \text{ litros} \end{array} \right.$$

$$\left\{ \begin{array}{l} 1000 - 1000x = 999 \\ -1000x = 999 - 1000 \\ (-1) \cdot -1000x = -1 \cdot (-1) \\ 1000x = 1 \end{array} \right.$$

$$x = \frac{1}{1000} \rightarrow 0,001 \text{ m}^3$$

$$5 - V = a \cdot b \cdot c$$

$$V_J = 2a \cdot 2b \cdot c \rightarrow V_J = 4abc$$

Alternativa

$\rightarrow$  Como  $V_J = 4abc$  e  $V = abc$ , temos que

$$(V_J = 4V) \quad (\textcircled{C})$$

$$6 - \text{lado} = 4\sqrt{3} \text{ cm} - \text{equilátero}$$

$$AT = ?$$

$$h = ?$$

$$V = (4\sqrt{3})^3$$

$$V = 64 \cdot 3 \cdot \sqrt{3}$$

$$V = 192\sqrt{3} \text{ cm}^3$$

$$h_A = \frac{3}{2} \cdot 4\sqrt{3} \cdot \sqrt{3} \quad \left\{ \begin{array}{l} AB = \frac{4\sqrt{3}}{2} \cdot 6^3 \\ h_D = \frac{192\sqrt{3}}{3\sqrt{3}} \end{array} \right.$$

$$h_A = 6 \text{ cm} \quad \left\{ \begin{array}{l} AB = 12\sqrt{3} \text{ cm}^2 \\ h_D = 16 \text{ cm} \end{array} \right.$$

$$AL = 3 \cdot 4\sqrt{3} \cdot 16 \quad \left\{ \begin{array}{l} AT = 2AB + AL \\ AT = 2 \cdot 12\sqrt{3} + 192\sqrt{3} \end{array} \right.$$

$$AL = 192\sqrt{3} \text{ cm}^2 \quad \left\{ \begin{array}{l} AT = 24\sqrt{3} + 192\sqrt{3} \\ AT = 216\sqrt{3} \text{ cm}^2 \end{array} \right.$$

Alternativa

$$\textcircled{D}$$