

**2^a
SÉRIE**

CANAL SEDUC-PI2



PROFESSOR (A):

**ALEXSANDRO
KESLLER**



DISCIPLINA:

MATEMÁTICA



CONTEÚDO:

**GEOMETRIA ESPACIAL
II CONES-CILINDROS-
ESFERAS**



TEMA GERADOR:

**ARTE
NA ESCOLA**



DATA:

30.10.2019

ROTEIRO DE AULA

GEOMETRIA ESPACIAL II

➤ Cilindro

Cálculo da área e volume

➤ Cone

Cálculo da área e volume

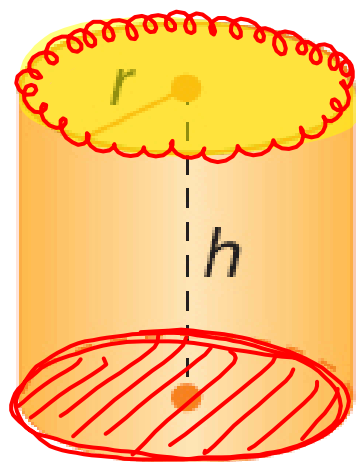
➤ Esfera

Cálculo da área e volume

Área da superfície (Total)

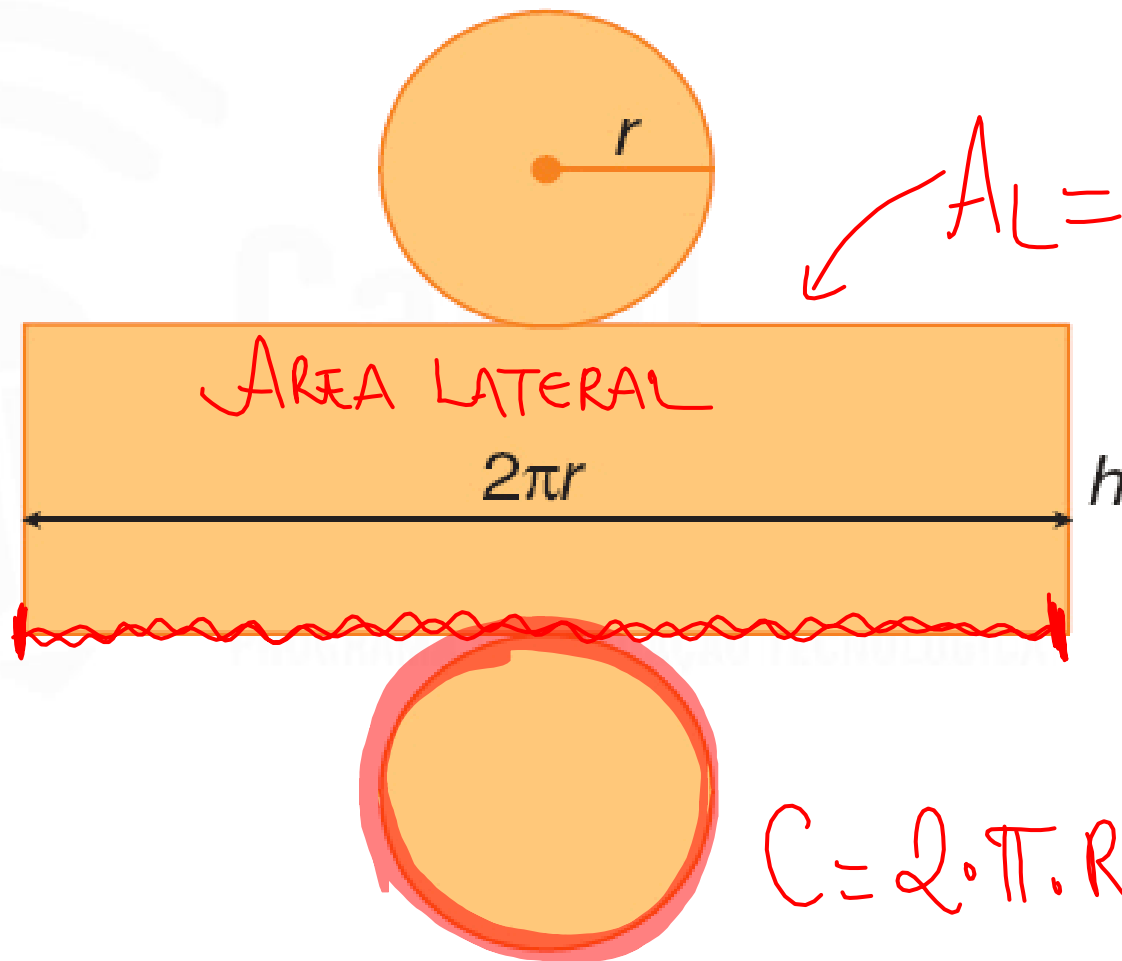
$$\Rightarrow A_T = 2 \cdot A_{\text{BASE}} + A_L$$

$$A_{\bullet} = \pi \cdot R^2$$



$$A_{\text{BASE}} = \pi \cdot R^2$$

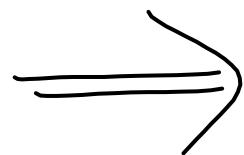
$$C = 2 \cdot \pi \cdot R$$



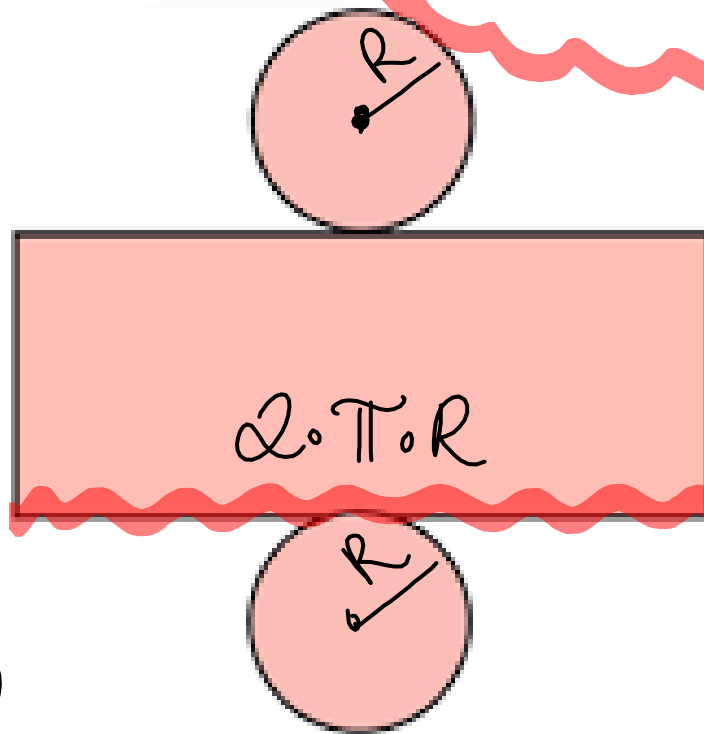
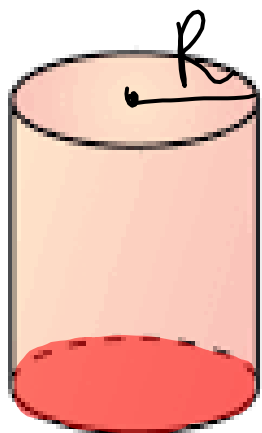
$$C = 2 \cdot \pi \cdot R$$

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

Área Base (A_b)



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



$$2 \cdot \pi \cdot R$$



h

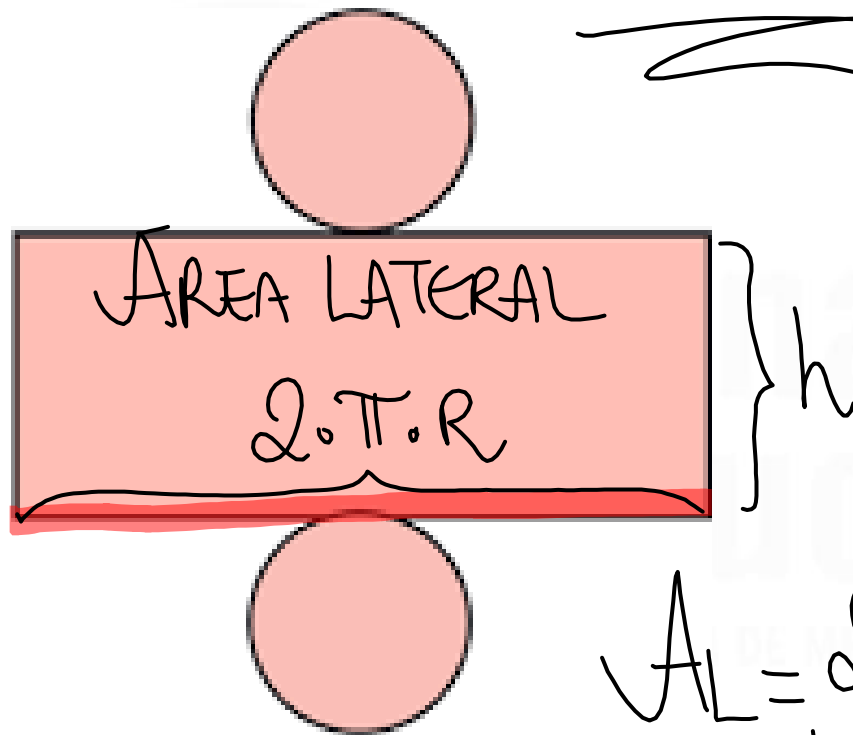
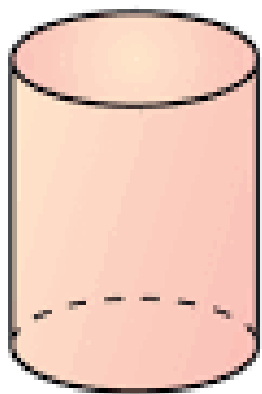
$$A_{\text{LATERAL}} = \underbrace{2 \cdot \pi \cdot R}_{\text{Base do Retângulo}} \cdot \underbrace{h}_{\text{altura}}$$

BASE = CÍRCULO

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

Área Lateral (A_L)

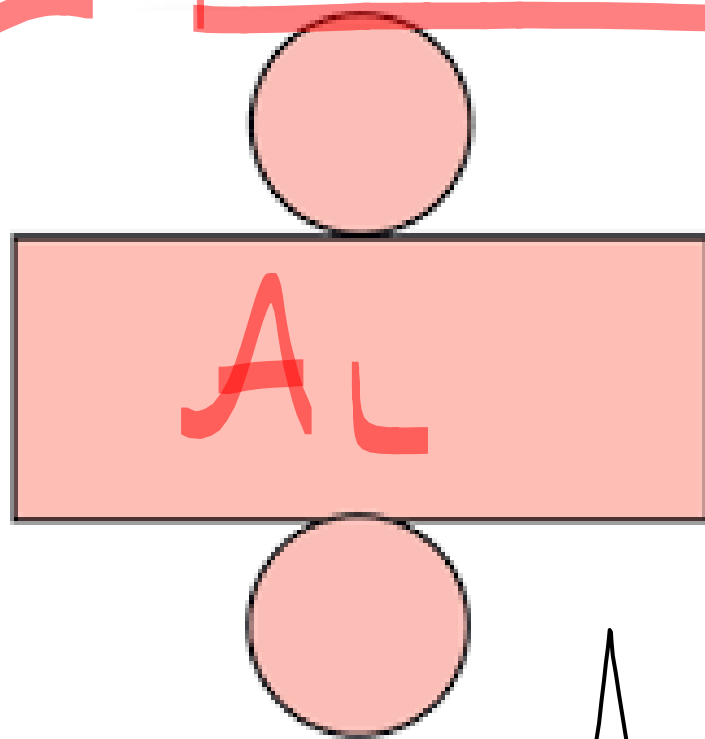
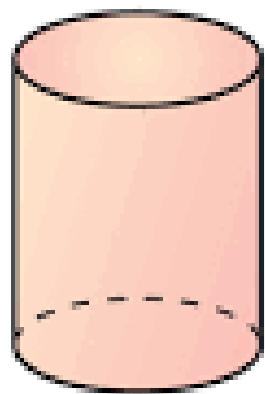
$$\Rightarrow A_L = 2 \cdot \pi \cdot R \cdot h$$



$$A_L = \underbrace{2 \cdot \pi \cdot R}_{\text{Base do Retângulo}} \cdot \underbrace{h}_{\text{altura}}$$

Área Total (A_t)

$$\Rightarrow A_T = 2 \cdot A_B + A_L$$

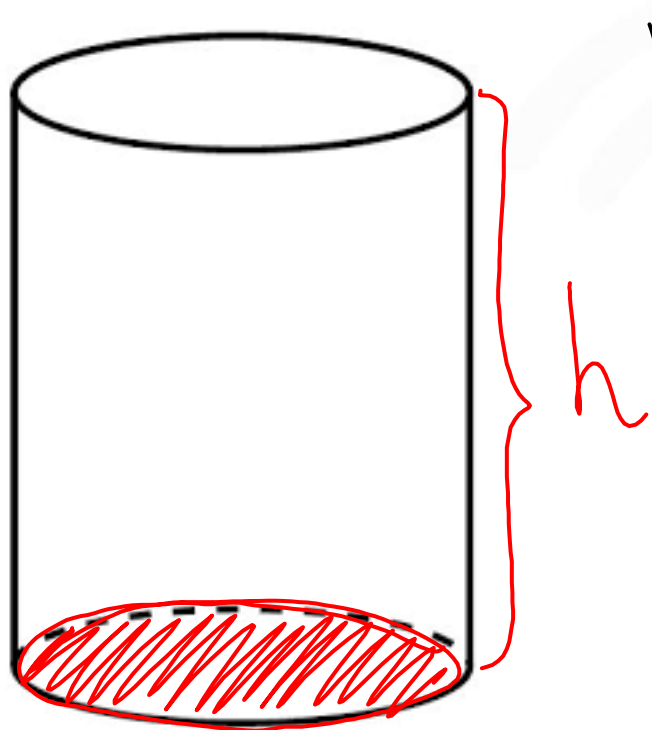


$$A_B = \pi \cdot R^2$$

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

$$A_{TOTAL} = \underbrace{2 \cdot \pi \cdot R^2}_{\text{ÁREA DA BASE}} + \underbrace{2 \cdot \pi \cdot R \cdot h}_{\text{ÁREA LATERAL}}$$

Volume (V)



↑
BASE

$$V_{\text{cilindro}} = A_{\text{base}} \times \text{ALTURA}$$

$$\underline{V = \pi \cdot R^2 \cdot h}$$

Áreas e Volumes (Cilindro)

Área Base(A_b)

$$A_b = \pi R^2$$

Área Lateral(A_L)

$$A_L = 2\pi Rh$$

Área Total(A_t)

$$A_t = 2A_b + A_L$$

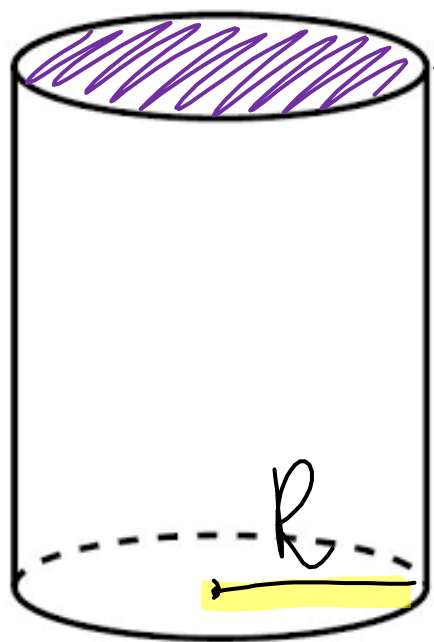
Volume(V)

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

EXERCÍCIO 1

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

A área lateral de um cilindro circular reto é $300\pi \text{ cm}^2$. Dado que a altura desse cilindro é 15 cm, calcule seu volume.



$$V = A_B \cdot h$$

$$V = 100\pi \cdot 15$$

$$V = 1500\pi \text{ cm}^3$$

$$A_B = \pi \cdot 10^2$$

$$A_B = 100\pi \text{ cm}^2$$

$$A_L = 300\pi$$

$$2 \cdot \pi \cdot R \cdot 15 = 300\pi$$

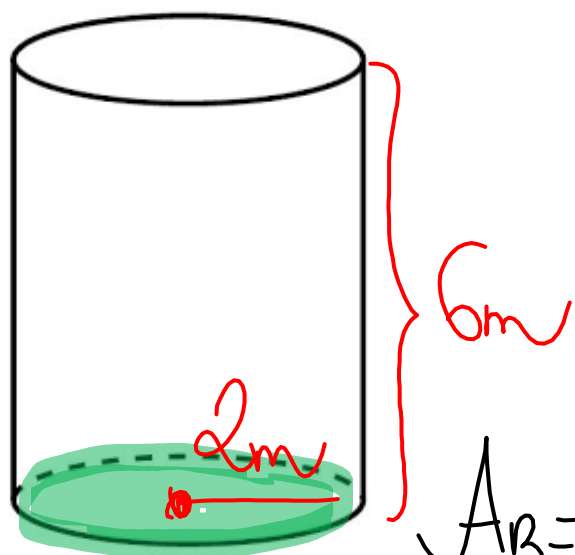
$$30\pi \cdot R = 300\pi$$

$$R = \frac{300\pi}{30\pi} = 10 \text{ cm}$$

EXERCÍCIO 2

$$1\text{ m}^3 \Rightarrow 1000\text{ l}$$

Um reservatório em formato cilíndrico possui 6 metros de altura e raio da base igual a 2 metros. Determine o volume e a capacidade desse reservatório em litros.



$$V = A_B \cdot h$$

$$V = 4\pi \cdot 6$$

$$V = 24\pi \text{ m}^3$$

?

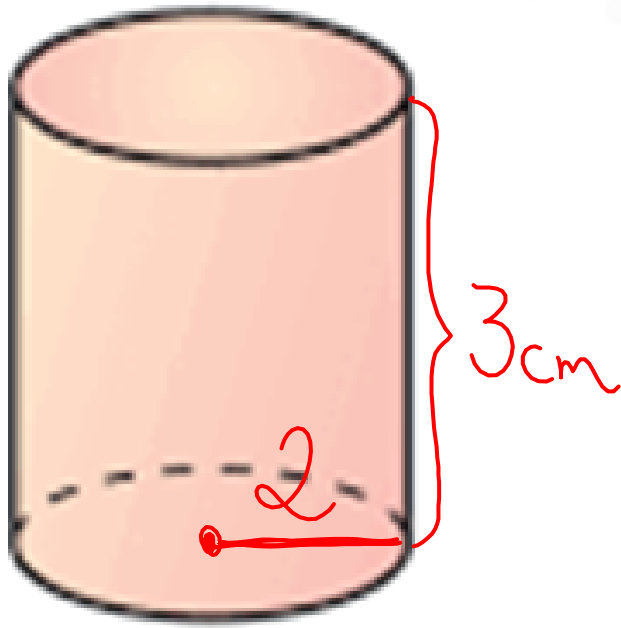
$$\text{CAPACIDADE} \Rightarrow \underline{\underline{24000\pi \text{ l}}}$$

$$A_B = \pi R^2$$

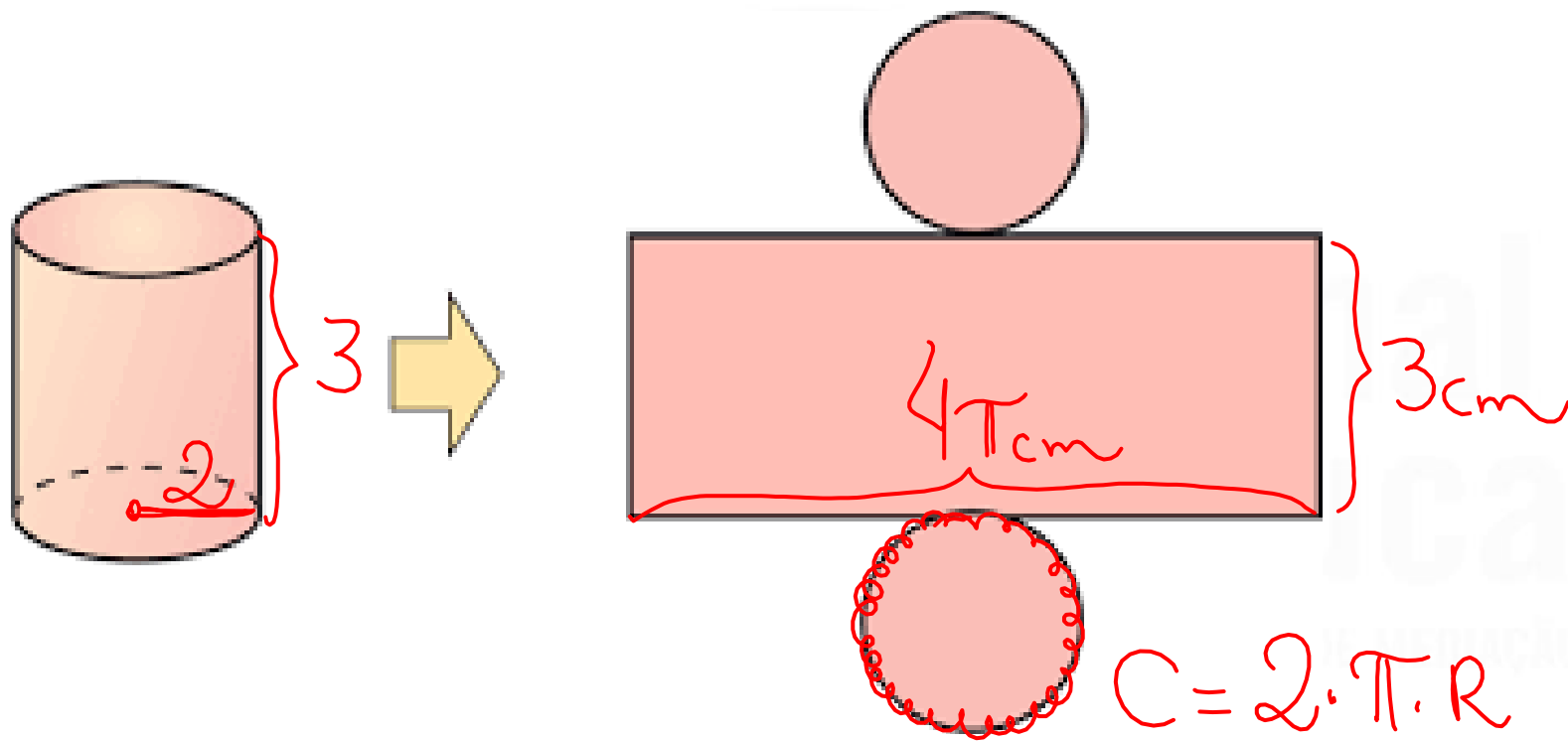
$$A_B = \pi \cdot 2^2 \Rightarrow 4\pi \text{ m}^2$$

EXERCÍCIO 3

Seja um cilindro circular reto de raio igual a 2 cm e altura 3 cm.
Calcular a área lateral, área total e o seu volume.



Área Lateral(A_L) $\Rightarrow A_L = 4\pi \cdot 3 = \underline{\underline{12\pi \text{ cm}^2}}$

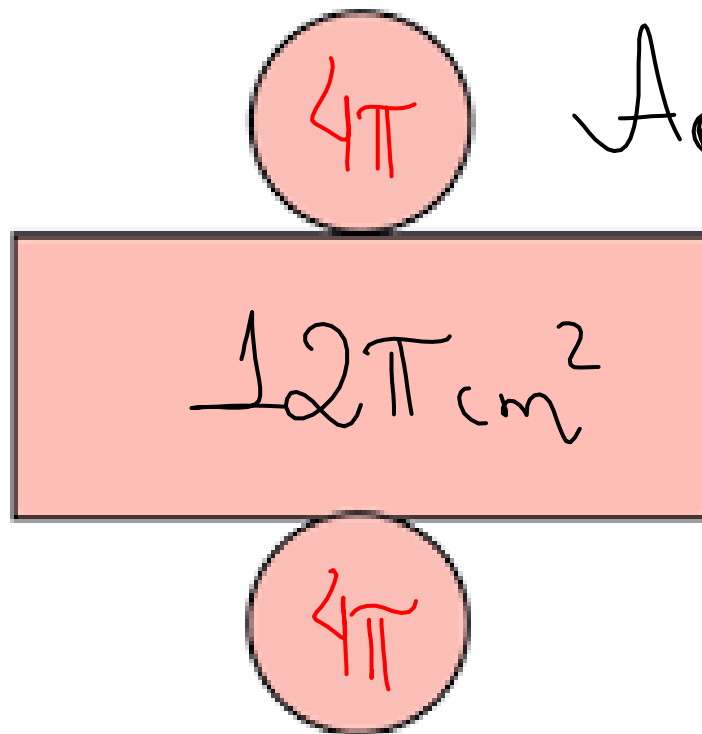
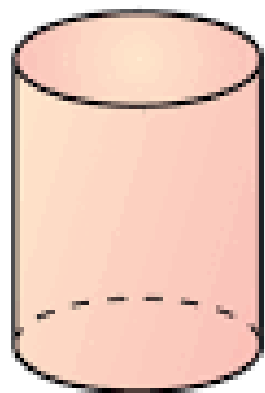


$$C = 2 \cdot \pi \cdot R$$

$$C = 2 \cdot \pi \cdot 2$$

$$\boxed{C = 4\pi \text{ cm}}$$

Área Total (A_t)



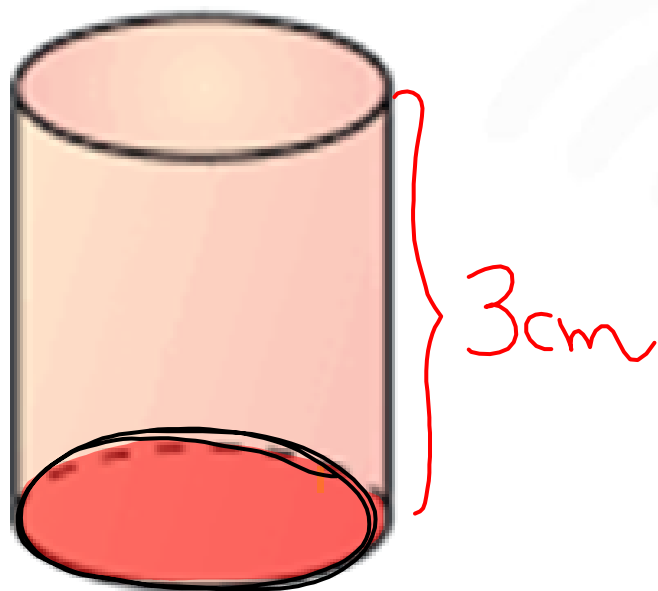
$$A_{\bullet} = \pi \cdot R^2$$

$$A_{\bullet} = \pi \cdot 2^2 = 4$$

$$A_{\bullet} = \underline{\underline{4\pi \text{ cm}^2}}$$

$$A_{\text{total}} = 4\pi + 4\pi + 12\pi = \boxed{20\pi \text{ cm}^2}$$

Volume(V)



$$V = A_B \cdot h$$

$$V = 4\pi \cdot 3$$

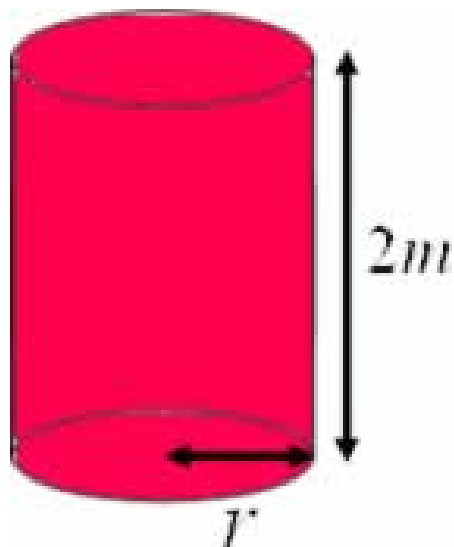
$$V = 12\pi \text{ cm}^3$$

$$\uparrow A_B = 4\pi \text{ cm}^2$$

EXERCÍCIO 4

P/CASA!

A figura indica o tambor cilíndrico de um aquecedor solar com capacidade de 1 570 litros.



Sabendo que 1 000 litros de água ocupam um volume de 1 m^3 e adotado $\pi = 3,14$, determine a medida do raio r do cilindro.