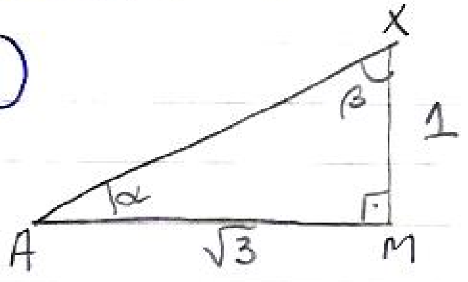
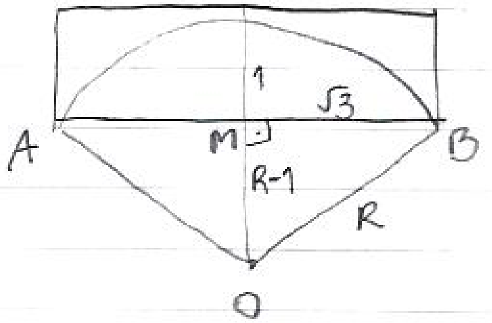
Aula 67

①



$tg\,\alpha = \frac{co}{ca} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3} \therefore \boxed{\alpha = 30°}$

$tg\,\beta = \frac{co}{ca} = \frac{\sqrt{3}}{1} = \sqrt{3} \therefore \boxed{\beta = 60°}$



Por Pitágoras

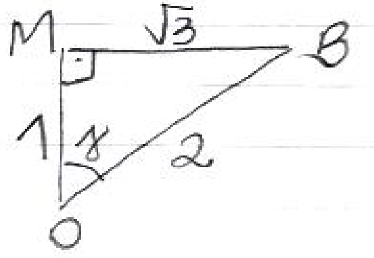
$R^2 = (R-1)^2 + \sqrt{3}^2$

$R^2 = R^2 - 2R + 1 + 3$

$0 = -2R + 4$

$2R = +4$

$\boxed{R = 2}$



$sen\,\gamma = \frac{co}{hip} = \frac{\sqrt{3}}{2}$

$\therefore \gamma = 60°$

$\therefore A\hat{O}B = 120°$

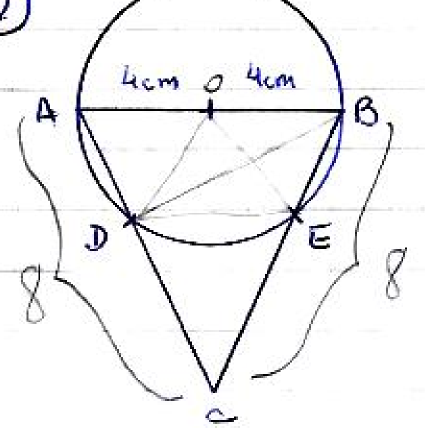
Área do setor circular

$360° = 2\pi R$

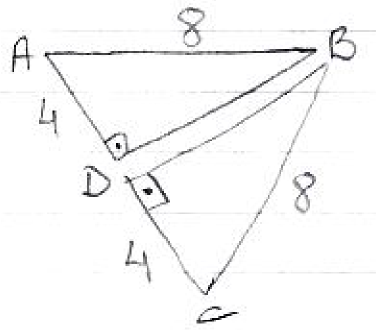
$120° = \frac{2\pi R}{3} = \frac{2 \cdot \pi \cdot 2}{3} = \frac{4\pi}{3}$

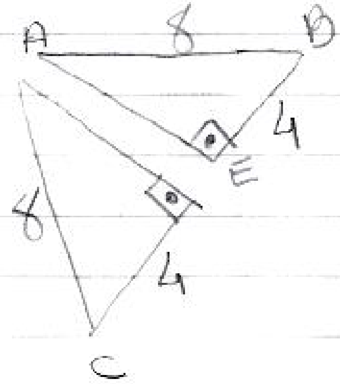
ALTERNATIVA C

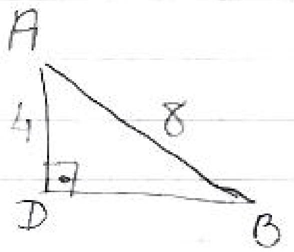
(2)



ABC - Triângulo equilátero







$AB^2 = AD^2 + DB^2$

$8^2 = 4^2 + DB^2$

$64 - 16 = DB^2$

$\sqrt{48} = DB$

$DB = 4\sqrt{3}$

Área do setor circular

$D\hat{O}E = A\hat{O}D = B\hat{O}E$

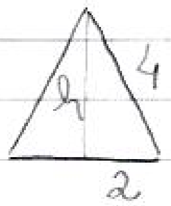
$360° = \pi R^2 = \pi . 16$

$60° = \quad x$

$x = \frac{16\pi . 60}{360}$

$x = \frac{16\pi}{6} = \frac{8\pi}{3}$

Área do Δ ODE



$4^2 = h^2 + 2^2$

$16 - 4 = h^2$

$h = \sqrt{12}$

$h = 2\sqrt{3}$

$Área = \frac{b.h}{2} = \frac{4.2\sqrt{3}}{2}$

$\boxed{Área = 4\sqrt{3}}$

Área do segmento circular:

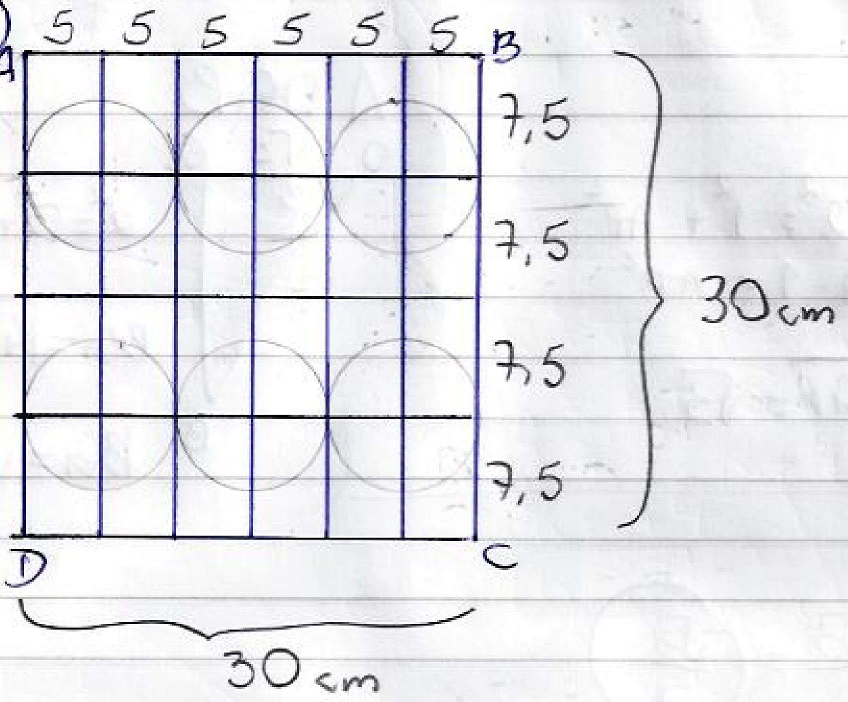
$A_{setor} - A_{\Delta} = \frac{8\pi}{3} - 4\sqrt{3}$

$Área\ pintada = 4\sqrt{3} - \left(\frac{8\pi}{3} - 4\sqrt{3}\right) =$

$8\sqrt{3} - \frac{8\pi}{3} = 8\left(\sqrt{3} - \frac{\pi}{3}\right)$ ALTERNATIVA C ou aplicar a fórmula do seg. circular.

$$S = \frac{\pi R^2 \alpha}{360°} - \frac{R^2 \operatorname{sen}\alpha}{2}$$

(3)



Área do $\square = 30 \times 30 = 900 \text{ cm}^2$

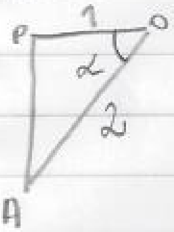
Área dos círculos $= 6 \cdot \pi R^2 = 6 \cdot \pi 5^2 =$
$= 6\pi \cdot 25 = 150\pi$

Área remanescente $= 900 - 150\pi =$
$= 150(6 - \pi)$

ALTERNATIVA A

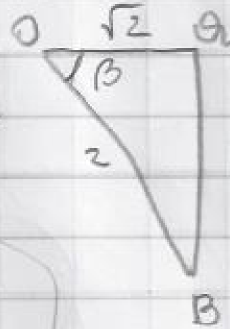
(4)

ΔAPO



$$2^2 = 1^2 + AP^2$$
$$4 - 1 = AP^2$$
$$\overline{AP} = \sqrt{3}$$

ΔOQB



$$2^2 = \sqrt{2}^2 + \overline{BQ}^2$$
$$BQ = \sqrt{4-2}$$
$$BQ = \sqrt{2}$$

a) Área ΔAPO

$$A = \frac{b \cdot h}{2} = \frac{1 \cdot \sqrt{3}}{2} = \frac{\sqrt{3}}{2}$$

b) α $\cos\alpha = \frac{ca}{hip} = \frac{1}{2} \therefore \alpha = 60°$

β $\cos\beta = \frac{ca}{hip} = \frac{\sqrt{2}}{2} \therefore \beta = 45°$

$A\hat{O}B = 180° - 60° - 45° =$
$= 180° - 105° =$
$= 75°$

Comprimento da C $= 2\pi R = 2 \cdot \pi \cdot 2 = 4\pi$

$360° = 4\pi$
$75° = x$

$$x = \frac{4\pi \, 75°}{360°}$$

$$x = \frac{\pi \, 75}{90}$$

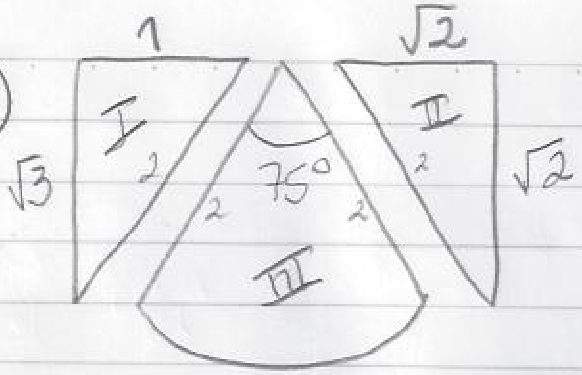
$$x = \frac{5\pi}{6}$$

ARCO $\overset{\frown}{AB}$

ARCO $\overset{\frown}{BA}$

$$4\pi - \frac{5\pi}{6} = \frac{19\pi}{6}$$

(C)



$$A_{I} = \frac{b.h}{2} = \frac{1.\sqrt{3}}{2} = \frac{\sqrt{3}}{2}$$

$$A_{II} = \frac{b.h}{2} = \frac{\sqrt{2}.\sqrt{2}}{2} = \frac{2}{2} = 1$$

$$A_{III} \Rightarrow \begin{array}{ccc} 360° & - \pi R^2 & - 4\pi \\ 75° & & x \end{array}$$

$$x = \frac{75.4\pi}{360}$$

$$x = \frac{75.\pi}{90}$$

$$x = \frac{5\pi}{6}$$

$$\text{Área total} = \frac{\sqrt{3}}{2} + 1 + \frac{5\pi}{6}$$