

Arcos e Ângulos

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Matemática

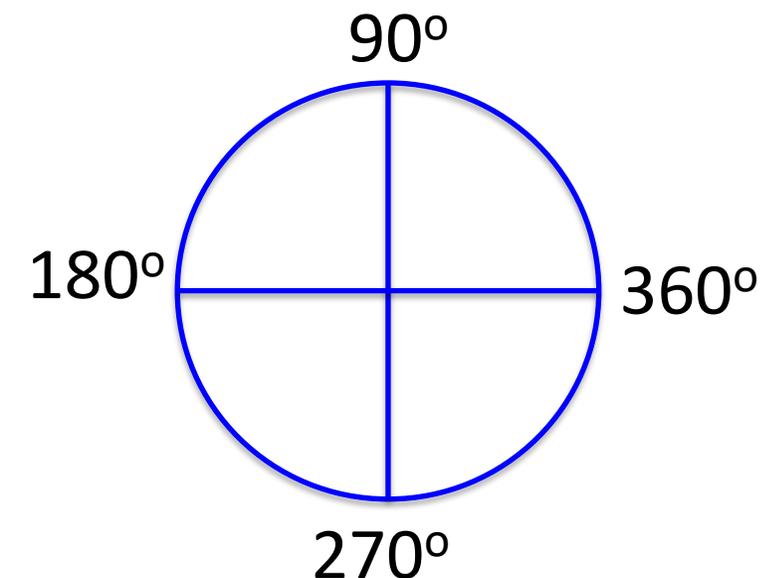
Arcos e ângulos

GRAUS

Sistema Sexagesimal

$1^\circ = \frac{1}{360}$ da circunferência.

1 volta completa = 360°



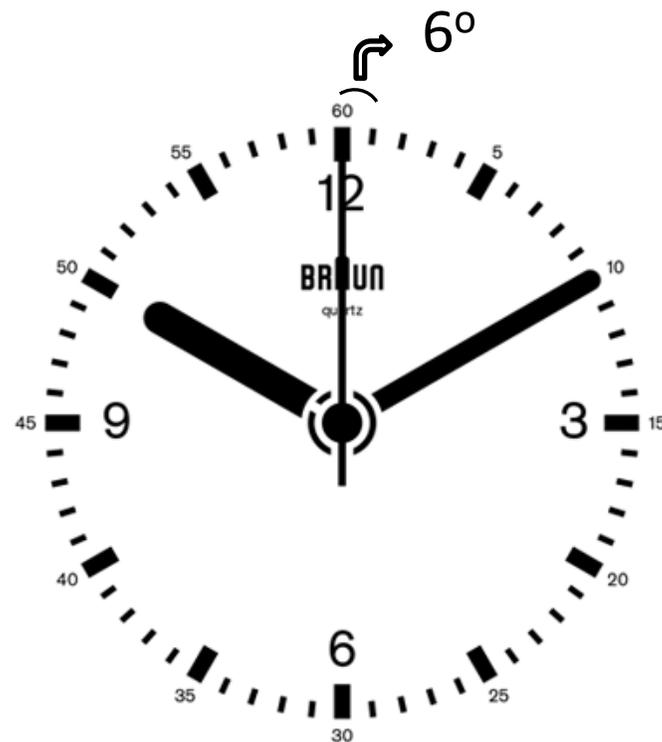
1 ângulo reto = 90°

2 ângulos retos = 180°

3 ângulos retos = 270°

4 ângulos retos = 360°

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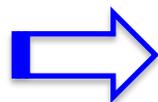


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Graus

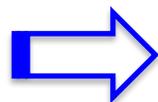
Submúltiplos de 1° .

1 grau = 60 minutos



$$1^\circ = 60'$$

1 minuto = 60 segundos



$$1' = 60''$$

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Graus

Exemplo 1:

Sendo $\alpha = 83^\circ 30' 39''$ e $\beta = 12^\circ 43' 45''$ calcule:

a) $\alpha + \beta$

b) $\alpha - \beta$

c) $19^\circ 32' 6'' \div 9$

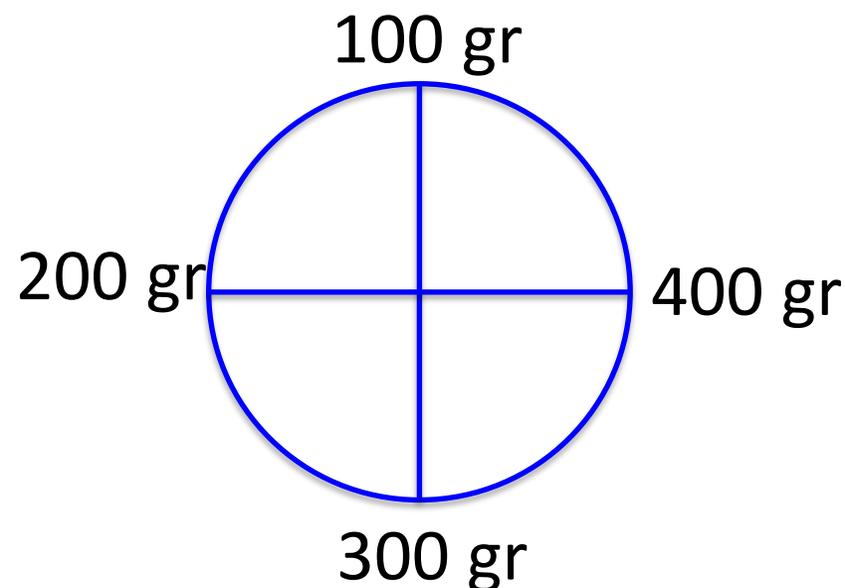
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Grados

Sistema Centesimal

$1\text{gr} = \frac{1}{400}$ da circunferência.

1 volta completa = 400 gr



1 ângulo reto = 100 gr

2 ângulos retos = 200 gr

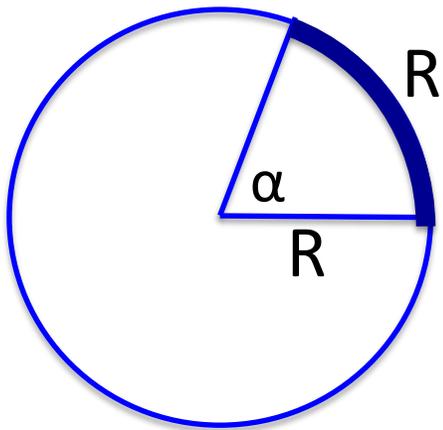
3 ângulos retos = 300 gr

4 ângulos retos = 400 gr

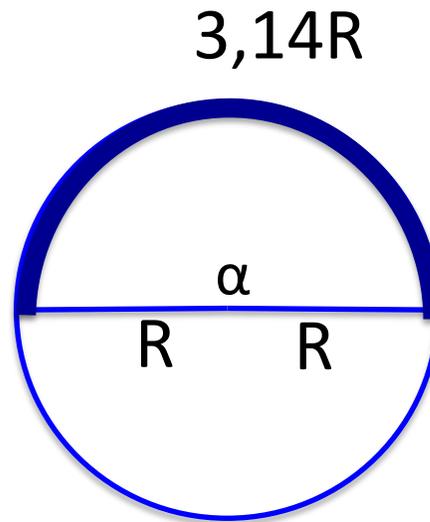
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Radianos

Sistema Circular



$$\alpha = 1 \text{ rad}$$



$$\alpha = \pi \text{ rad}$$

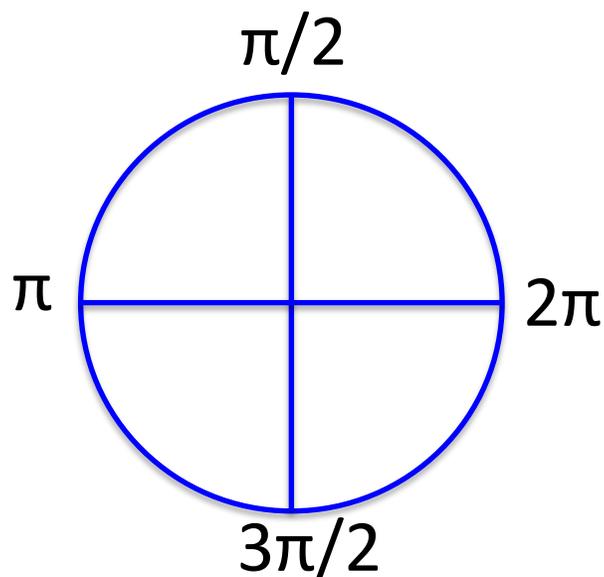
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Radianos

Sistema Circular

$$1 \text{ rad} = 180^\circ$$

$$1 \text{ volta completa} = 2\pi \text{ rad}$$



$$1 \text{ ângulo reto} = \pi/2$$

$$2 \text{ ângulos retos} = \pi$$

$$3 \text{ ângulos retos} = 3\pi/2$$

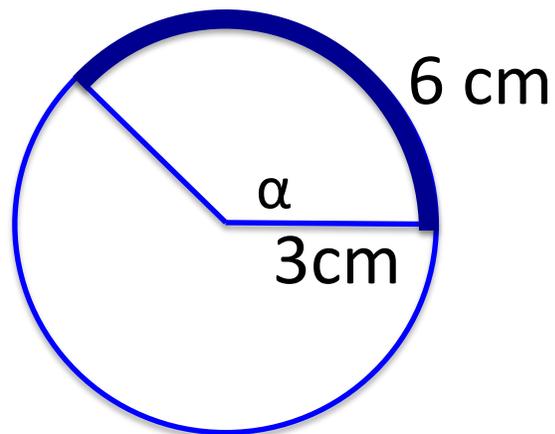
$$4 \text{ ângulos retos} = 2\pi$$

$$1 \text{ rad} \approx 57^\circ$$

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Exemplo 3:

Calcule α em radianos na figura ao lado.

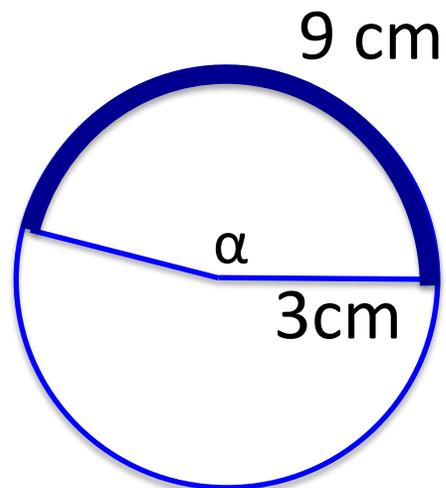


$$\alpha = 2 \text{ rad}$$

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Exemplo 3:

Calcule α em radianos na figura ao lado.



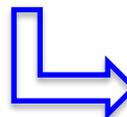
$$\alpha = 3 \text{ rad}$$

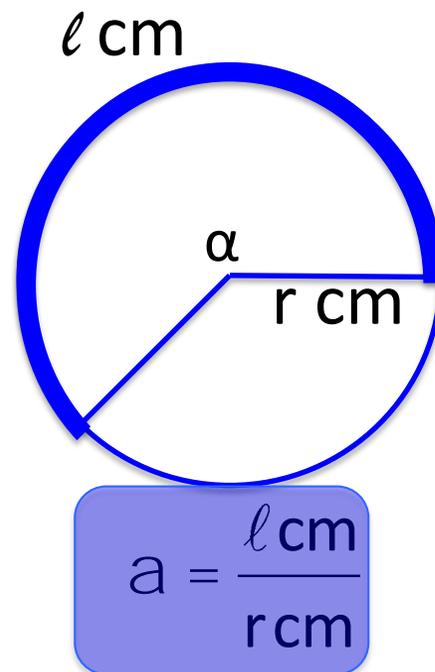
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Exemplo 5:

Calcule α em radianos na figura ao lado.

$$l = a \cdot r$$

 α em radianos



Obs: Radianos é uma unidade adimensional

Arcos e ângulos

Tabela de conversão.

Arcos	Graus	Grados	Radianos
1 reto	90°	100 gr	$\frac{\pi}{2}$ rad
2 retos	180°	200 gr	π rad
3 retos	270°	300 gr	$\frac{3\pi}{2}$ rad
4 retos	360°	400 gr	2π rad

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Radianos

Exemplo 3:

Converta para radianos os seguintes ângulos.

a) 120°

b) 300°

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FGV | Calcule o menor ângulo formado pelos ponteiros das horas e dos minutos de um relógio que marca 13 h 15 min.

$$a = \frac{60h - 11\text{min}}{2}$$