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Radian and Degree Measure

Obj: Convert from degrees to radians.
" " radians to degrees.

* To convert from degrees ~~from~~ to radians, use the conversion $\frac{\pi}{180}$ radians.

* To convert from radians to degrees, use the conversion $\frac{180}{\pi}$ degrees.

Ex) Convert 35° to radians.

$$35^\circ\left(\frac{\pi}{180}\right) = \frac{35\pi}{180} = \frac{7}{36}\pi$$

Note: Your answer should contain a "π".

Ex) Convert 45° to radians

$$45\left(\frac{\pi}{180}\right) = \frac{45\pi}{180} = \frac{1}{4}\pi$$

Ex) Convert 35° to radians

$$35\left(\frac{\pi}{180}\right) = \frac{35\pi}{180} = \frac{7\pi}{36}$$

Note: Your final answer should contain "π"

Ex) Convert 45° to radians. (reference angle)

$$45\left(\frac{\pi}{180}\right) = \frac{9}{36}\pi = \frac{1\pi}{4}$$

Ex) Convert $\frac{4\pi}{3}$ to degrees.

$$\frac{4\pi}{3} \cdot \left(\frac{180}{\pi}\right) = 240°$$

Ex) Convert 250° to radians.

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Ex) Convert 35° to radians.

$$35\left(\frac{\pi}{180}\right) = \boxed{\frac{35\pi}{180}} = \boxed{\frac{7\pi}{36}}$$

Note: Your final answer should contain "π".

Ex) Convert 45° to radians.

$$45\left(\frac{\pi}{180}\right) = \frac{45\pi}{180} = \frac{9\pi}{36} = \boxed{\frac{\pi}{4}}$$

Ex) Convert $\frac{4\pi}{3}$ to degrees.

$$\frac{4\pi}{3}\left(\frac{180}{\pi}\right) = 240^\circ$$

Note: Your final should NOT contain "π".

Ex) Convert π to degrees.

$$\pi\left(\frac{180}{\pi}\right) = 180^\circ$$

Convert 250° to radians.

$$250\left(\frac{\pi}{180}\right) = \frac{250}{180}\pi = \frac{25}{18}\pi$$

conversion factor

Convert ~~3~~ $\frac{2\pi}{7}$ ~~to~~ degrees

$$\frac{2\pi}{7}\left(\frac{180}{\pi}\right) = \frac{360}{7} \approx 51.4^\circ$$

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A) Find the area of sector AOB

$S = \frac{1}{2} r^2 \theta$

- S: Area of a sector
- r: radius
- θ: theta (angle)

So, $S = \frac{1}{2}(9^2)\left(\frac{2\pi}{3}\right)$

$S = \frac{\theta}{360} \cdot \pi r^2$ (θ in degrees)

θ: theta (in degrees)

1st = Convert $\frac{2\pi}{3}$ to degrees

$\frac{2}{3}\pi\left(\frac{180}{\pi}\right) = \frac{360}{3} = 120$

So, $S = \frac{120}{360} \cdot \pi(9^2) = \boxed{84.82\ cm^2}$

$$l = \frac{x}{360} \cdot 2\pi r$$

degrees

radius

$$l = \frac{120}{360} \cdot 2\pi(9)$$

$$l = 18.84 \text{ cm}$$

Scratch work:

$$\frac{2\pi}{3} \cdot \left(\frac{180}{\pi}\right) =$$

$$\frac{360}{3} = 120^\circ$$