Precalculus

Conversions between degrees and radians

Todor Miley

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- The relationship between degrees and radians is:

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- In other words, a half-turn is measured by π rad or 180°.
- Degrees are useful because the most frequently encountered fractions of a half turn are measured by a whole number of degrees.
- If a measurement unit is not specified, it is implied to be radians.
 For example, in sin 5, the number 5 stands for 5 radians.

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

COLIVE	Convert from degrees to radians.												
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°						
Rad.													

$$x=\frac{x}{\pi}180^{\circ}.$$

Example

Rad.	$\frac{\pi}{3}$	$\frac{11\pi}{6}$		$\frac{\pi}{7}$	$\frac{13\pi}{6}$	$-\frac{5\pi}{4}$	2
Deg.			•				

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Deg.	45°	36°	−20°	360°	−720°	−225°	2015°						
Rad.	?												

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Example

	π	π	11π	7π	π	13π	5π	_
Rad.	3	10	6	4	7	6		2
Deg.		10			,		7	

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

COLIVE	sometiment aggrees to radians.												
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°						
Rad.	$\frac{\pi}{4}$												

$$x=\frac{x}{\pi}180^{\circ}.$$

Example

Rad.	$\frac{\pi}{-}$	π	11π	7π	$\frac{\pi}{-}$	13π	5π	2
i ida.	3	10	6	4	7	6	4	_
Deg.								

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

COLLACI	sonvert from degrees to radians.											
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°					
Rad.	$\frac{\pi}{4}$?										

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Example

Rad.	$\frac{\pi}{-}$	π	11π	7π	$\frac{\pi}{-}$	13π	5π	2
i ida.	3	10	6	4	7	6	4	_
Deg.								

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

0011101	convert norm degrees to radians.												
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°						
DI	π	π											
Rad.	$\frac{\overline{4}}{4}$	<u>5</u>											

$$x = \frac{x}{\pi} 180^{\circ}$$
.

Example

Rad.	$\frac{\pi}{-}$	π	11π	7π	$\frac{\pi}{-}$	13π	-5π	2
i ida.	3	10	6	4	7	6	4	_
Deg.								

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

0011101	convert from degrees to radiane.												
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°						
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$?										

$$x=\frac{x}{\pi}180^{\circ}.$$

Example

Rad.	$\frac{\pi}{3}$	$\frac{11\pi}{6}$		$\frac{\pi}{7}$	$\frac{13\pi}{6}$	$-\frac{5\pi}{4}$	2
Deg.			•				

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Convert from degrees to radians.

0011101	Convoir nom adgreed to radiane.												
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°						
Dod	π	π	π										
Rad.	$\frac{\overline{4}}{4}$	5	$-\frac{-}{9}$										

$$x=\frac{x}{\pi}180^{\circ}.$$

Example

Rad.	$\frac{\pi}{2}$	$\frac{\pi}{100}$	$\frac{11\pi}{2}$	$\frac{7\pi}{4}$	$\frac{\pi}{=}$	$\frac{13\pi}{2}$	$-\frac{5\pi}{4}$	2
	3	10	6	4		6	4	
Deg.								

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

COLLACI	Convert from degrees to radians.											
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°					
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$?								

$$x = \frac{x}{\pi} 180^{\circ}$$
.

Example

Rad.	$\frac{\pi}{-}$	π	11π	7π	$\frac{\pi}{-}$	13π	-5π	2
i ida.	3	10	6	4	7	6	4	_
Deg.								

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Convert from degrees to radians.

COLIVE	Convert from degrees to radians.											
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°					
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π								

$$x = \frac{x}{\pi} 180^{\circ}$$
.

Example

Rad.	$\frac{\pi}{-}$	π	11π	7π	$\frac{\pi}{-}$	13π	-5π	2
i ida.	3	10	6	4	7	6	4	_
Deg.								

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COLLACT	Convert from degrees to radians.											
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°					
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	?							

$$x = \frac{x}{\pi} 180^{\circ}$$
.

Example

Rad.	$\frac{\pi}{3}$	$\frac{\pi}{10}$	$\frac{11\pi}{6}$	$\frac{7\pi}{4}$	$\frac{\pi}{7}$	$\frac{13\pi}{6}$	$-\frac{5\pi}{4}$	2
Deg.		-						

$$t^{\circ} = \frac{t}{180}\pi$$
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COLIVCI	convert from degrees to radians.											
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°					
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π							

$$x = \frac{x}{\pi} 180^{\circ}$$
.

Example

Rad.	$\frac{\pi}{-}$	π	11π	7π	$\frac{\pi}{-}$	13π	-5π	2
i ida.	3	10	6	4	7	6	4	_
Deg.								

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COLLACI	Convert from degrees to radians.											
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Example

Rad.	$\frac{\pi}{-}$	π	11π	7π	$\frac{\pi}{-}$	13π	-5π	2
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Deg.	45°	36°	−20°	360°	−720°	−225°	2015°					
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$						

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Example

Rad.	$\frac{\pi}{-}$	π	11π	7π	$\frac{\pi}{-}$	13π	-5π	2
i ida.	3	10	6	4	7	6	4	_
Deg.								

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

Deg.	Deg. 45° 36° -20° 360° -720° -225° 2015°									
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$?			

$$x=\frac{x}{\pi}180^{\circ}.$$

Example

Rad.	$\frac{\pi}{-}$	π	11π	7π	$\frac{\pi}{-}$	13π	-5π	2
i ida.	3	10	6	4	7	6	4	_
Deg.								

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

0011101	Convert from degrees to radiane.											
Deg.	45°	36°	_20°	360°	−720°	−225°	2015°					
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$	$\frac{403}{36}\pi$					

$$x = \frac{x}{\pi} 180^{\circ}$$
.

Example

Rad.	$\frac{\pi}{-}$	π	11π	7π	$\frac{\pi}{-}$	13π	-5π	2
i ida.	3	10	6	4	7	6	4	_
Deg.								

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

COLLACI	convert from degrees to radians.											
Deg.	45°	36°	_20°	360°	−720°	−225°	2015°					
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$	$\frac{403}{36}\pi$					

$$x = \frac{x}{\pi} 180^{\circ}$$
.

Example

Rad.	$\frac{\pi}{3}$	$\frac{\pi}{10}$	$\frac{11\pi}{6}$	$\frac{7\pi}{4}$	$\frac{\pi}{7}$	$\frac{13\pi}{6}$	$-\frac{5\pi}{4}$	2
Deg.	?							

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

COLLACI	convert from degrees to radians.											
Deg.	45°	36°	_20°	360°	−720°	−225°	2015°					
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$	$\frac{403}{36}\pi$					

$$x=\frac{x}{\pi}180^{\circ}.$$

Example

Rad.	$\frac{\pi}{3}$	$\frac{\pi}{10}$	$\frac{11\pi}{6}$	$\frac{7\pi}{4}$	$\frac{\pi}{7}$	$\frac{13\pi}{6}$	$-\frac{5\pi}{4}$	2
Deg.	60°	. 0	J	•	,		•	

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

0011101	convert norn degrees to radiane.											
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°					
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$	$\frac{403}{36}\pi$					

$$x = \frac{x}{\pi} 180^{\circ}$$
.

Example

Rad.	$\frac{\pi}{2}$	$\frac{\pi}{10}$	$\frac{11\pi}{2}$	$\frac{7\pi}{4}$	$\frac{\pi}{2}$	$\frac{13\pi}{6}$	$-\frac{5\pi}{4}$	2
Deg.	60°	?	Ь	4	1	6	4	

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

0011101	Convert nom degrees to radiane.											
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°					
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$	$\frac{403}{36}\pi$					

$$x = \frac{x}{\pi} 180^{\circ}$$
.

Example

Dad	π	π	11 π	$ 7\pi $	π	\mid 13 π	5π	_
Rad.	$\frac{1}{3}$	10	-6	4	7	6		2
Deg.	60°	18°		·				

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

0011101	Convert nom degrees to radiane.											
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°					
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$	$\frac{403}{36}\pi$					

$$x = \frac{x}{\pi} 180^{\circ}$$
.

Example

Rad.	$\frac{\pi}{3}$	$\frac{\pi}{10}$	$\frac{11\pi}{6}$	$\frac{7\pi}{4}$	$\frac{\pi}{7}$	$\frac{13\pi}{6}$	$-\frac{5\pi}{4}$	2
Deg.	60°	18°	?					

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

0011101	Convert nom degrees to radiane.											
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°					
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$	$\frac{403}{36}\pi$					

$$x=\frac{x}{\pi}180^{\circ}.$$

Example

Rad.	$\frac{\pi}{3}$	$\frac{\pi}{10}$	$\frac{11\pi}{6}$	$\frac{7\pi}{4}$	$\frac{\pi}{7}$	$\frac{13\pi}{6}$	$-\frac{5\pi}{4}$	2
Deg.	60°	18°	330°					

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

0011101	Convert nom degrees to radiane.											
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°					
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$	$\frac{403}{36}\pi$					

$$x=\frac{x}{\pi}180^{\circ}.$$

Example

Rad.	π	π	11 π	7π	π	$ $ 13 π	5π	2
mau.	3	10	6	4	7	6	4	
Deg.	60°	18°	330°	?				

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

COLLACI	Convert from degrees to radians.										
Deg.	45°	36°	_20°	360°	−720°	−225°	2015°				
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$	$\frac{403}{36}\pi$				

$$x = \frac{x}{\pi} 180^{\circ}$$
.

Example

Г				44			40		
	DI	π	π	11π	$\prime\pi$	π	\mid 13 π	5π	
	Rad.	_			_	=			2
L		3	10	6	4	/	6	4	
	Deg.	ദ∩∘	1 2 °	330°	315°				
	Deg.	00	10	000	515				

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

COLIVCI	convert nom degrees to radians.											
Deg.	45°	36°	−20°	360°	−720°	-225°	2015°					
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$	$\frac{403}{36}\pi$					

$$x=\frac{x}{\pi}180^{\circ}.$$

Example

				44	 -		40		
		π	π	11π	$\prime\pi$	π	\mid 13 π	5π	_
	Rad.	_				-			2
		3	10	6	4	7	6	4	
Г						-			
	Dog	enº	100	330°	2150	2			
	Deg.	00	10	330	313	f .			

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

0011101	convert nom degrees to radiane.										
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°				
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$	$\frac{403}{36}\pi$				

$$x = \frac{x}{\pi} 180^{\circ}$$
.

Example

Rad.	$\frac{\pi}{3}$	$\frac{\pi}{10}$	$\frac{11\pi}{6}$	$\frac{7\pi}{4}$	$\frac{\pi}{7}$	$\frac{13\pi}{6}$	$-\frac{5\pi}{4}$	2
Deg.	60°	18°	330°	315°	$\frac{180}{7}^{\circ}\approx25.7^{\circ}$			

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

0011101	convert nom degrees to radiane.										
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°				
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$	$\frac{403}{36}\pi$				

$$x = \frac{x}{\pi} 180^{\circ}$$
.

Example

Rad.	$\frac{\pi}{3}$	$\frac{\pi}{10}$	$\frac{11\pi}{6}$	$\frac{7\pi}{4}$	$\frac{\pi}{7}$	$\frac{13\pi}{6}$	$-\frac{5\pi}{4}$	2
Deg.	60°	18°	330°	315°	$\frac{180}{7}^{\circ}\approx25.7^{\circ}$?	•	

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

000.		409.0	00 to .a.	a.a			
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$	$\frac{403}{36}\pi$

$$x=\frac{x}{\pi}180^{\circ}.$$

Example

Rad.	$\frac{\pi}{3}$	$\frac{\pi}{10}$	$\frac{11\pi}{6}$	$\frac{7\pi}{4}$	$\frac{\pi}{7}$	$\frac{13\pi}{6}$	$-\frac{5\pi}{4}$	2
Deg.	60°	18°	330°	315°	$\frac{180}{7}^{\circ}\approx25.7^{\circ}$	390°	7	

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

0011101	convert nom degrees to radiane.										
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°				
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$	$\frac{403}{36}\pi$				

$$x = \frac{x}{\pi} 180^{\circ}$$
.

Example

Γ	Rad.	π	π	11 π	7π	π	13π	5π	2
	riau.	3	10	6	4	7	6	4	
	Dog	60°	100	2200	0150	$\frac{180}{7}^{\circ} \approx 25.7^{\circ}$	2000	9	
	Deg.	60	10	330	313	${7} \approx 23.7$	390	f	

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

0011101	convert nom degrees to radiane.										
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°				
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$	$\frac{403}{36}\pi$				

$$x = \frac{x}{\pi} 180^{\circ}$$
.

Example

Rad.	π	π	11 π	7π	π	13π	5π	2
riau.	3	10	6	4	7	6	4	
Dog	ကေ	100	၁၁∩∘	2150	$\frac{180^{\circ}}{7} \approx 25.7^{\circ}$	2000	-225°	
Deg.	00	10	330	313	${7}$ ≈ 25.7	390	-225	

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

0011101	convert nom degrees to radiane.										
Deg.	45°	36°	−20°	360°	−720°	−225°	2015°				
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$	$\frac{403}{36}\pi$				

$$x = \frac{x}{\pi} 180^{\circ}$$
.

Example

ſ	Rad.	π	π	11π	7π	$\frac{\pi}{}$	13π	5π	2
		3	10	6	4	7	6	4	_
	Deg.	60°	18°	330°	315°	$\frac{180}{7}^{\circ}\approx25.7^{\circ}$	390°	−225°	?

$$t^{\circ} = \frac{t}{180}\pi$$
 (radians).

Convert from degrees to radians.

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Deg.	45°	36°	−20°	360°	−720°	−225°	2015°				
Rad.	$\frac{\pi}{4}$	$\frac{\pi}{5}$	$-\frac{\pi}{9}$	2π	-4π	$-\frac{5\pi}{4}$	$\frac{403}{36}\pi$				

$$x = \frac{x}{\pi} 180^{\circ}$$
.

Example

Rad	$\frac{\pi}{3}$	$\frac{\pi}{10}$	$\frac{11\pi}{6}$	$\frac{7\pi}{4}$	$\frac{\pi}{7}$	$\frac{13\pi}{6}$	$-\frac{5\pi}{4}$	2
Deg	. 60°	18°	330°	315°	$\frac{180}{7}^{\circ}\approx25.7^{\circ}$	390°	−225°	$\frac{2}{\pi}$ 180° \approx 114.6°