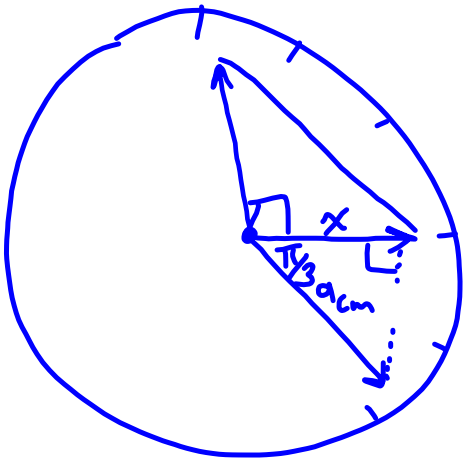
Homework Questions?

11
15



$\frac{360°}{12°} = 30°$

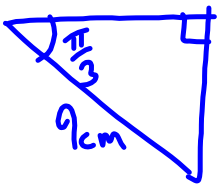
$rad = \frac{\pi}{6}$

$\cos\frac{\pi}{3} = \frac{x}{9}$

$\frac{1}{2} = \frac{x}{9}$

$\frac{9}{2} = x$

$4.5cm = x$



15) $2\sin^2\theta - 1 = \sin^2\theta - \cos^2\theta$

for $\frac{11\pi}{6}$

LHS

$= 2\sin^2\theta - 1$

$= 2\left(\sin\left(\frac{11\pi}{6}\right)\right)^2 - 1$

$= 2\left(-\frac{1}{2}\right)^2 - 1$

$= 2\left(\frac{1}{4}\right) - 1$

$= \frac{1}{2} - 1$

$= -\frac{1}{2}$

RHS

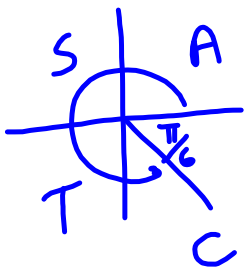
$= \sin^2\theta - \cos^2\theta$

$= \left(\sin\frac{11\pi}{6}\right)^2 - \left(\cos\frac{11\pi}{6}\right)^2$

$= \left(\frac{-1}{2}\right)^2 - \left(\frac{\sqrt{3}}{2}\right)^2$

$= \frac{1}{4} - \frac{3}{4}$

$= -\frac{2}{4} = -\frac{1}{2}$

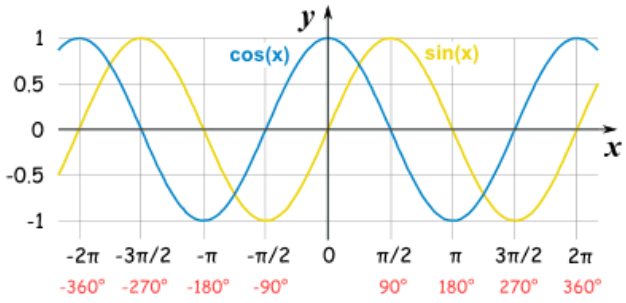


$\therefore$ LHS = RHS

Lesson 6.03 - Graphs of Primary Trigonometric Functions

Learning Goals:

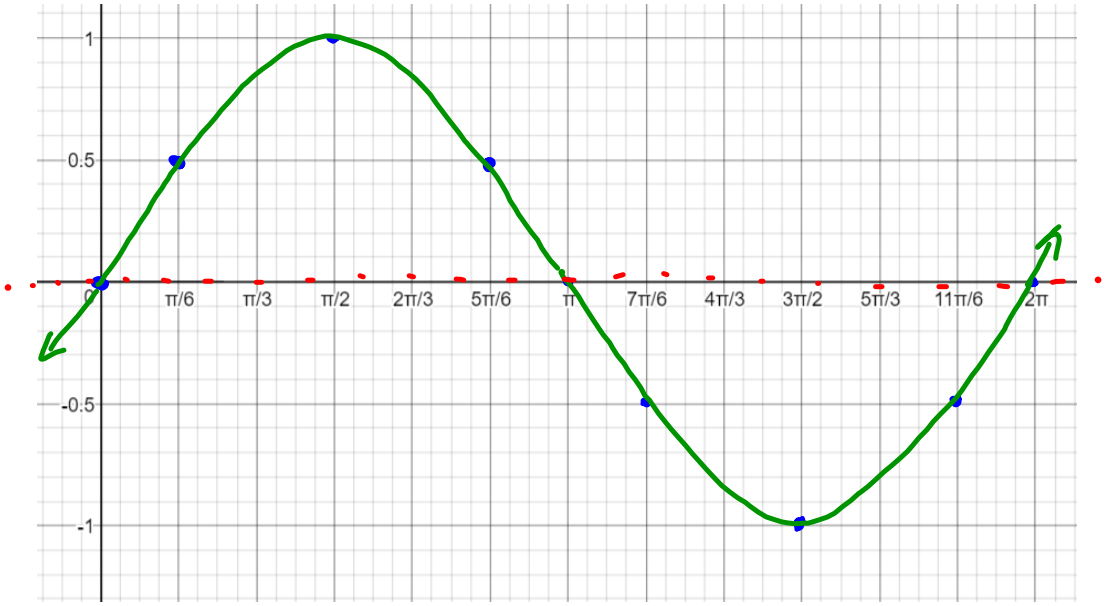
- I can graph primary trigonometric functions using radians
- I can create formulas that describe various properties of trigonometric functions



Trig Chart!

	0	π/6	π/4	π/3	π/2	2π/3	3π/4	5π/6	π
sin Θ	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
cos Θ	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	$-\frac{1}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{\sqrt{3}}{2}$	−1
tan Θ = sin Θ /cos Θ	0	$\frac{1}{\sqrt{3}}$ or $\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	—	$-\sqrt{3}$	−1	$-\frac{\sqrt{3}}{3}$	0
	7π/6	5π/4	4π/3	3π/2	5π/3	7π/4	11π/6	2π	
sin Θ	$-\frac{1}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{\sqrt{3}}{2}$	−1	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{1}{2}$	0	
cos Θ	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{1}{2}$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1	
tan Θ =sin Θ / cos Θ	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	—	$-\sqrt{3}$	−1	$-\frac{\sqrt{3}}{3}$	0	

$y = \sin\theta$



Period: 2π

Equation of the Axis: $y = 0$

Amplitude: 1

Min Value: -1

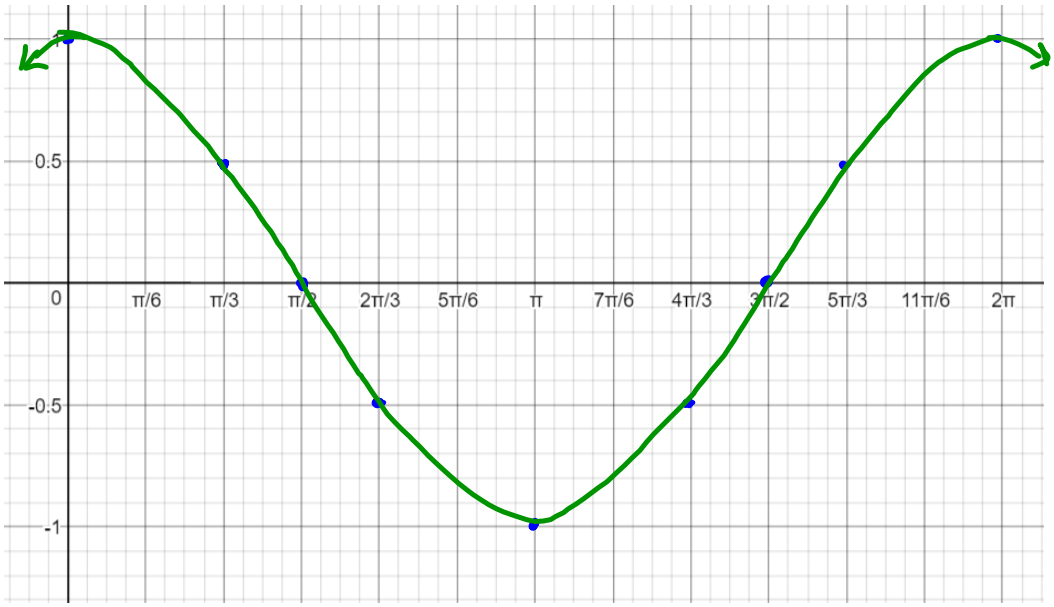
Max Value: 1

Domain: $x \in \mathbb{R}$

Range: $[-1, 1]$

Zeros: $0, \pi, 2\pi, \ldots$

$y = \cos\theta$



Period: 2π

Equation of the Axis: $y = 0$

Amplitude: 1

Min Value: -1

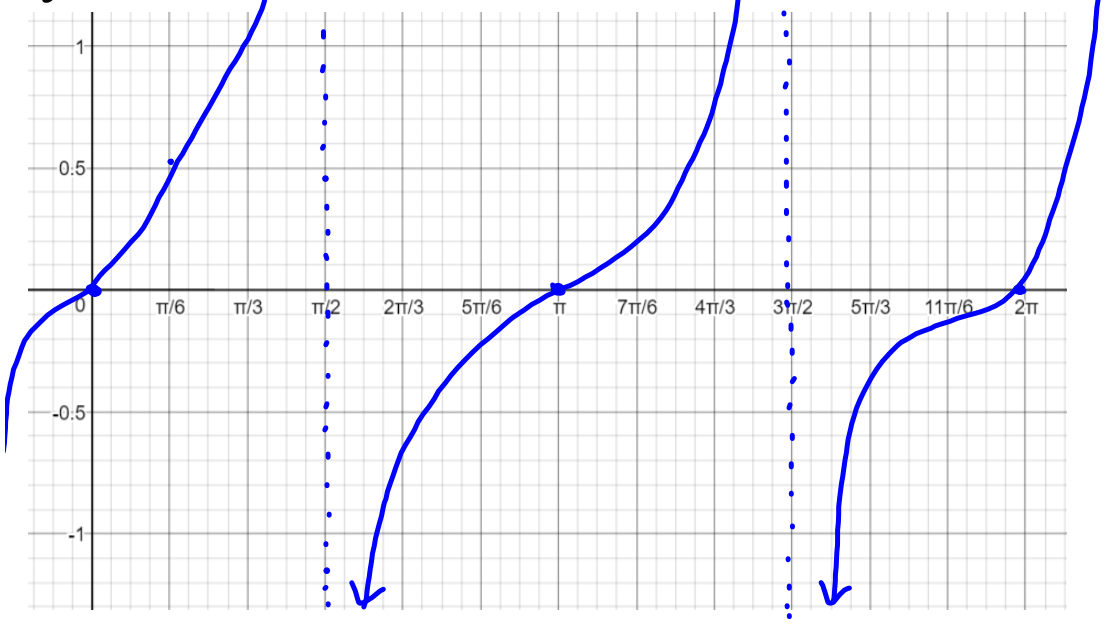
Max Value: 1

Domain: $x \in \mathbb{R}$

Range: $[-1, 1]$

Zeros: $\frac{\pi}{2}, \frac{3\pi}{2}, \frac{5\pi}{2}, \ldots$

$y = \tan\theta$



Period: π

Equation of the Axis: $y = 0$

Amplitude: N/A

Min Value: $-\infty$ } NONE

Max Value: ∞ }

Domain: $\{x \in \mathbb{R} \mid x \neq \frac{\pi}{2}, \frac{3\pi}{2}, \frac{5\pi}{2}, \dots\}$

Range: $y \in \mathbb{R}$

Zeros: $0, \pi, 2\pi, \dots$

Recall: The formula for an arithmetic sequence $t_n=a+(n-1)d$, where a is the first term, d is the amount the sequence increases/decreases by, and n is the term number.

It is more precise to write a set of values as a formula or expression.

For example, the set of numbers {2, 4, 6, 8, 10, ...} can be expressed as the expression 2n, where n is an integer beginning at 1.

Note: there are many formulas that can be found for this example! Let's determine some other ways…

$\{2n \mid n \geq 1, n \in \mathbb{N}\}$ ⋮ $\{2n+2 \mid n \in \mathbb{W}$

⋮ $\{2n-4 \mid n \geq 3, n \in \mathbb{N}\}$

Create any formula that determines all values in the Domain for y = tan x.

Note: there are many formulas that could work!

$D: \{x \in \mathbb{R} \mid x \neq \frac{\pi + 2n\pi}{2}, n \in \mathbb{Z}\}$

OR

$D: \{x \in \mathbb{R} \mid x \neq \frac{\pi}{2} + \pi n, n \in \mathbb{Z}\}$

Homework:

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