

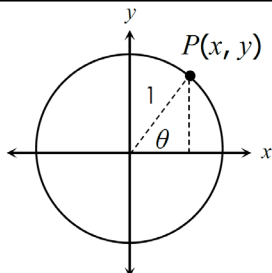
Student Time Expectation per day: **30 minutes**

Content Area & Materials	Learning Objectives	Tasks	Check-in Opportunities	Submission of Work for Grades	
<div>Digital</div> <div>(If you can work digitally, please do. It will help to keep us all safe 😊)</div> <div>Khan Academy (KA) Access Code: G2Z9QPT5 EdPuzzle (EP) Access Code: WEFOBEC Desmos Access Code: 4JXG5D</div>	<div>Suggested Order / Pacing</div> <ul style="list-style-type: none">Graphing sin, cos and tan (Khan Academy) MondayGraphing by hand sin, cos, tan, (EdPuzzle) TuesdayMidline, Amplitude, Period Khan Academy WednesdayTrigonometric Graphing: Introduction to Amplitude and Vertical Shift (Desmos) Thursday	<ul style="list-style-type: none">Students are to complete the assigned Khan Academy, Desmos.All links will be provided via the course checklist page.	<div>Mrs. De La Mora is available during the office hours at the times indicated below.</div> <ul style="list-style-type: none">12:00 – 2:00 pm Monday-FridayRemind App CODE: 9b69eeadelamora@tusd.net	<ul style="list-style-type: none">KA assignments will be recorded with the highest scores attainedSubmit the summary assignment through a picture via Remind App. (Scored on Accuracy)	
<div>Hard Copy (Please only use this if you do not have technology available)</div> <ul style="list-style-type: none">Notes + ExamplesAssignments <div>Do these assignments ONLY if you do not have digital access.</div>	<div>Suggested Order / Pacing</div> <ul style="list-style-type: none">Graphing sin, cos and tan (Khan Academy) MondayGraphing by hand sin, cos, tan, (EdPuzzle) TuesdayMidline, Amplitude, Period Khan Academy WednesdayTrigonometric Graphing: Introduction to Amplitude and Vertical Shift (Desmos) Thursday	<ul style="list-style-type: none">Students are to read the lesson and examples providedOn a separate sheet of paper for each assignment, complete ALL problems showing your work.	<div>Mrs. De La Mora is available during the office hours at the times indicated below.</div> <ul style="list-style-type: none">12:00 – 2:00 pm Monday-FridayRemind App CODE: 9b69eeadelamora@tusd.net	<ul style="list-style-type: none">Group your work together for your math class IN ORDER, and with the following labels clearly displayed: <div>Student Name: Teacher Name: Class Name/Subject: Period: Assignment Week #</div> <ul style="list-style-type: none">Assignments will be scored on accuracy.	
<div>Scheduled, if possible,</div> <ul style="list-style-type: none">Discussion	Zoom classes can be held during tutoring hours. Schedule your meetings by visiting the class website: kimballmath.wordpress.com Discussions will revolve around discovery and application of concepts assigned for the week.				
Scaffolds & Supports	KA assignments can often be re-tried to improve learning. Videos are utilized to demonstrate not only key concepts, but also frequent points of errors, helping students avoid pitfalls.				
Teacher Office Hours 2 hours daily (all classes): <ul style="list-style-type: none">ContactPlatform	Monday 12:00 – 2:00 pm	Tuesday 12:00 – 2:00 pm	Wednesday 12:00 – 2:00 pm	Thursday 12:00 – 2:00 pm	Friday 12:00 – 2:00 pm

Student Name:
Teacher:
Subject: **Algebra 2**
Period:
Assignment
Week#: **4**

NOTES: Complete all work on a separate sheet of paper. Include the heading provided on each worksheet you turn in. Show all work.

Graphing Sine and Cosine



Because the value of r is 1 for each point $P(x, y)$ on the unit circle, the trig functions for θ are defined as:

$$\sin \theta = \frac{\text{opp}}{\text{hyp}} = \frac{y}{1} = y$$

$$\cos \theta = \frac{\text{adj}}{\text{hyp}} = \frac{x}{1} = x$$

$$\tan \theta = \frac{\text{opp}}{\text{adj}} = \frac{y}{x}$$

Our parent functions begin with the UNIT Circle.

If you are working from the **UNIT circle**, then you can graph trig functions using the corresponding **coordinates**.

θ and $\sin \theta \rightarrow (\theta, y)$

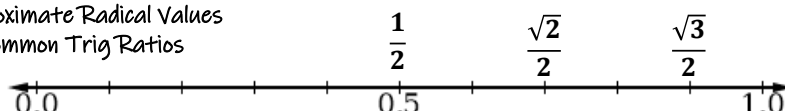
θ and $\cos \theta \rightarrow (\theta, x)$

θ and $\tan \theta \rightarrow (\theta, \frac{y}{x})$

Table of Values going all the way around the Unit circle:

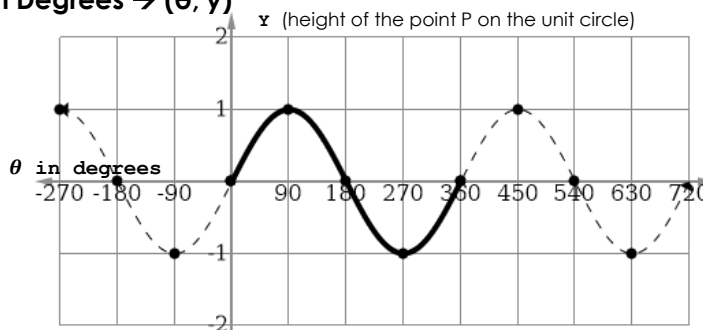
	Quadrant I				Quadrant II				Quadrant III				Quadrant IV				
θ degrees	0	30	45	60	90	120	135	150	180	210	225	240	270	300	315	330	360
θ radians	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2\pi}{3}$	$\frac{3\pi}{4}$	$\frac{5\pi}{6}$	π	$\frac{7\pi}{6}$	$\frac{5\pi}{4}$	$\frac{4\pi}{3}$	$\frac{3\pi}{2}$	$\frac{5\pi}{3}$	$\frac{7\pi}{4}$	$\frac{11\pi}{6}$	2π
x	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	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{1}{2}$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
y	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	$-\frac{1}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{\sqrt{3}}{2}$	-1	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{1}{2}$	0

Approximate Radical Values
for common Trig Ratios



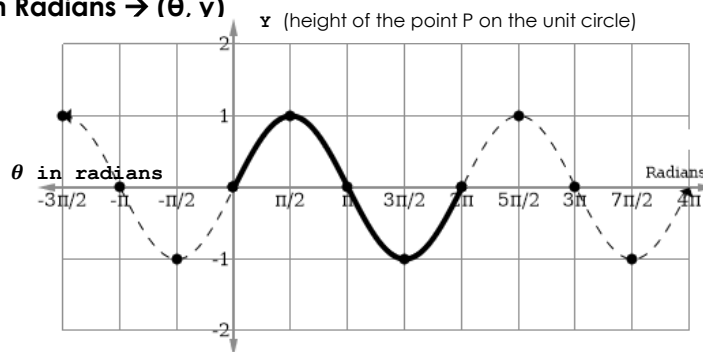
$f(\theta) = \sin \theta \rightarrow$ in Degrees $\rightarrow (\theta, y)$

θ°	y
0	0
90	1
180	0
270	-1
360	0



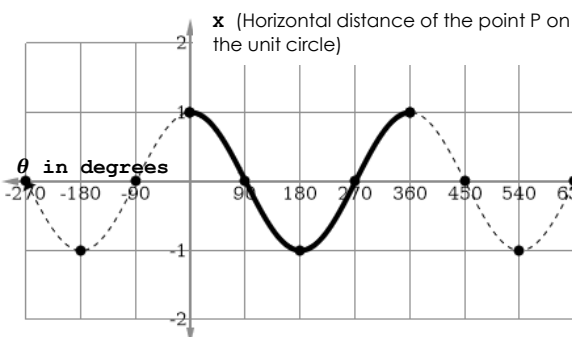
$f(\theta) = \sin \theta \rightarrow$ in Radians $\rightarrow (\theta, y)$

θ_{rad}	y
0	0
$\frac{\pi}{2}$	1
π	0
$\frac{3\pi}{2}$	-1
2π	0



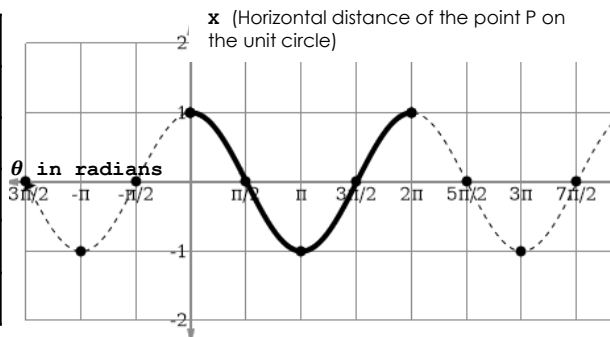
$f(x) = \cos \theta \rightarrow$ in Degrees $\rightarrow (\theta, x)$

θ°	y
0	1
90	0
180	-1
270	0
360	1



$f(x) = \cos \theta \rightarrow$ in Radians $\rightarrow (\theta, x)$

θ_{rad}	y
0	1
$\frac{\pi}{2}$	0
π	-1
$\frac{3\pi}{2}$	0
2π	1



STEPS for GRAPHING Parent Trig Functions

1. Identify Function
☐ Sin
☐ Cos
☐ Tan
2. Identify Axis and scale & if degrees OR radians
☐ Sin $\rightarrow (\theta, y)$
☐ Cos $\rightarrow (\theta, x)$
☐ Tan $\rightarrow (\theta, \frac{y}{x})$
3. Use "Friendly" Angles (0, 90, 180, 270, 360) to scale the horizontal axis.
3. Extend the horizontal axis forward and backward (rotations go forever forward and/or back)
3. Connect...NO sharp points, curves only.

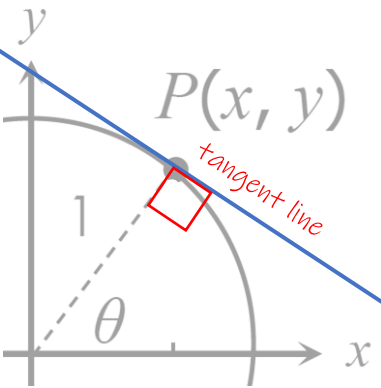
Student Name:
Teacher:
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Assignment Week#: **4**

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Graphing Tangent

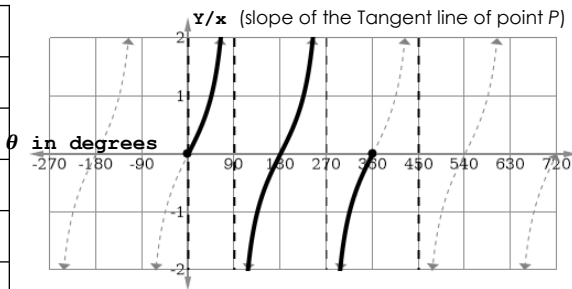
Table of Values going all the way around the Unit circle:

θ degrees	0	30	45	60	90	120	135	150	180	210	225	240	270	300	315	330	360
θ radians	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2\pi}{3}$	$\frac{3\pi}{4}$	$\frac{5\pi}{6}$	π	$\frac{7\pi}{6}$	$\frac{5\pi}{4}$	$\frac{4\pi}{3}$	$\frac{3\pi}{2}$	$\frac{5\pi}{3}$	$\frac{7\pi}{4}$	$\frac{11\pi}{6}$	2π
x	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	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{1}{2}$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
y	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	$-\frac{1}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{\sqrt{3}}{2}$	-1	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{1}{2}$	0



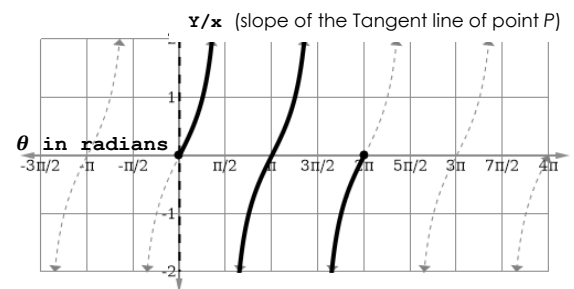
$f(\theta) = \tan \theta \rightarrow$ in Degrees $\rightarrow (\theta, y/x)$

θ°	y/x
0	0
90	undef
180	0
270	undef
360	0



$f(\theta) = \tan \theta \rightarrow$ in Radians $\rightarrow (\theta, y/x)$

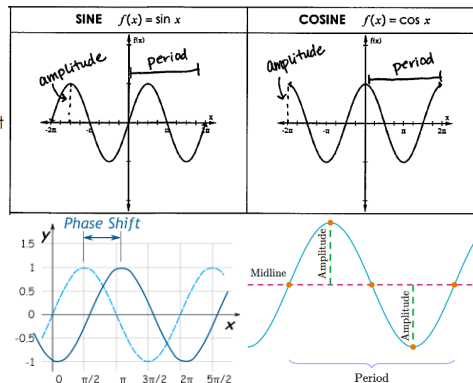
θ_{rad}	y/x
0	0
$\frac{\pi}{2}$	undef
π	0
$\frac{3\pi}{2}$	undef
2π	0



Key Features of Periodic Functions

Definitions:

- Periodic functions are functions that repeat exactly in regular intervals, called **cycles**.
- Trigonometric functions are periodic!
- Period:** the length of a cycle. Periods can start at any point on the graph.
- Amplitude:** Half the distance between the minimum and maximum values.
- Phase Shift:** Horizontal shifts. Be careful here, the **b-value** MUST be factored out to find the phase shift represented by the **h-value**.
- Midline:** The reference line to which a graph oscillates. The midline is represented by the **k-value**.



Finding the Key Features from Transformed Functions

$$g(x) = a \sin(b(x - h)) + k$$

Amplitude: $|a|$

Period: $\frac{2\pi}{b}$ OR $\frac{360^\circ}{b}$

Phase Shift: h , but make sure the b value is factored out.

Midline: k

Steps for graphing a Sinusoidal Function of the form

$$g(x) = a \sin(b(x - h)) + k$$

OR

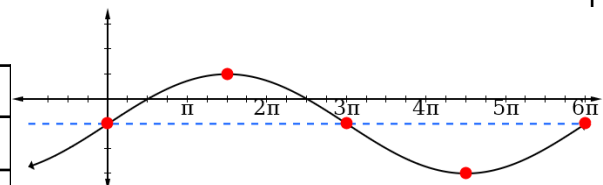
$$g(x) = a \cos(b(x - h)) + k$$

- Identify if measurements are in degrees or radians.
- Identify transformation parameters a , b , h , and k . make sure the b -value is factored out.
- Start with parent function reference points
- Apply Transformations
- To scale horizontal axis, it is often easiest to make fractions with common denom.

Applying Amplitude and Period:

$$g(x) = 2 \sin\left(\frac{1}{3}x\right) - 1$$

x	$\sin x$	$2 \sin x$	$2 \sin x - 1$
0	0	0	-1
$\frac{3\pi}{2}$	$\frac{\pi}{2}$	1	0
3π	π	0	-1
$\frac{9\pi}{2}$	$\frac{3\pi}{2}$	-1	-2
6π	2π	0	-1



Student Name:
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Period:
Week #: **4**

Do these assignments
ONLY if you do not have
digital access!

Complete all work on a separate sheet of paper.
Show all work. Include the heading provided on
each worksheet you turn in. **Use the Unit Circle,**
not a calculator!

Monday & Tuesday

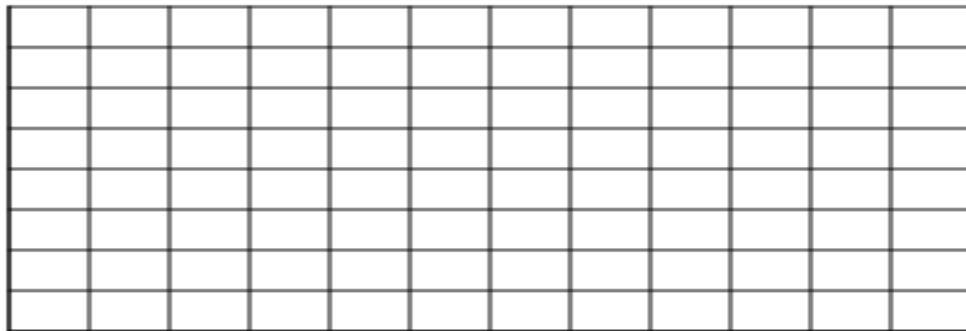
Read and STUDY the notes pages!!!

Do all work by HAND

- Complete the table for the parent function
- Scale your axis
- Graph the sinusoidal, continuing throughout the extent of the coordinate plane.

In Degrees

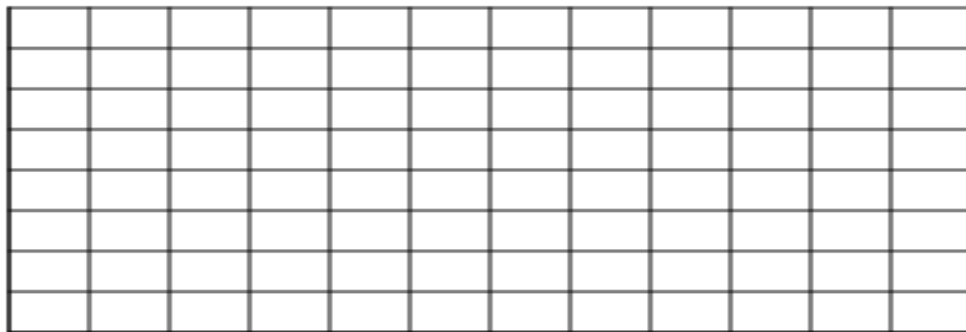
$$f(x) = \sin x$$



How would you extend
the graphs of these
functions?

In Radians

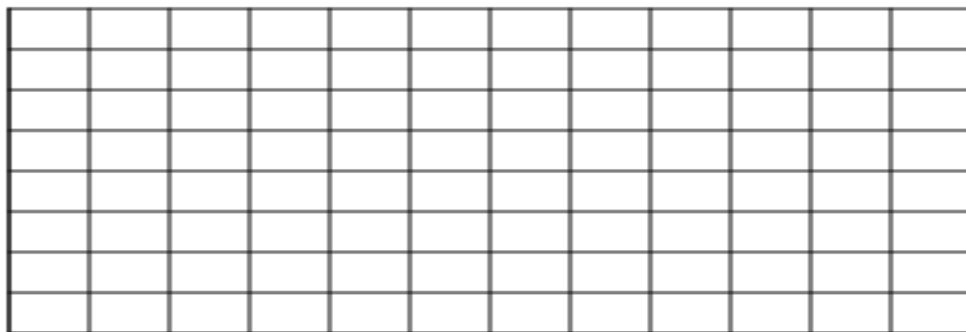
$$f(x) = \cos x$$



Why can they be
extended?

In Radians

$$f(x) = \tan x$$



Why are there undefined
values for some of the
tangents?

Identify the amplitude and period of each function.

$$f(x) = \frac{1}{2} \sin(4x)$$

Amplitude:

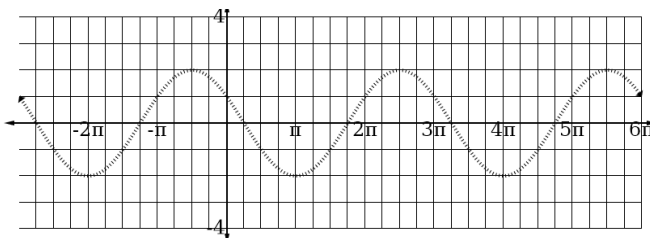
Period:

$$f(x) = -3 \cos\left(\frac{1}{4}x\right)$$

Amplitude:

Period

On the graph below, diagram ONE period, and the Amplitude. Then give the appropriate measurements.



Amplitude:

Period:

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[illegible]