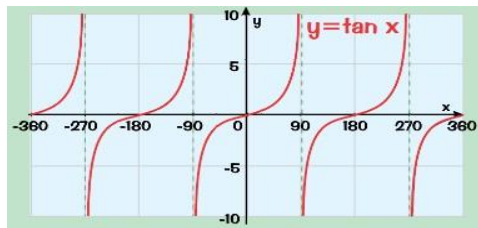
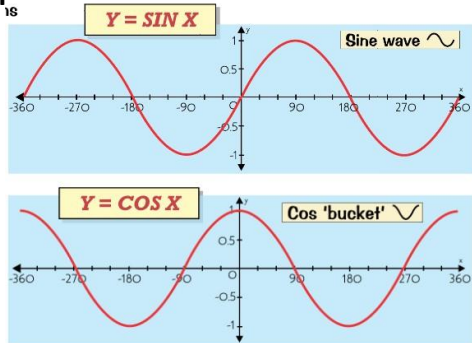




65 - Graphs of Trigonometric Functions

The 3 Basic Trigonometric graphs:



All trig graphs have $^{\circ}$ on the x axis. On the y axis the sine and cosine graphs oscillate between 1 and -1. Tan goes from negative to positive infinity.

Common Values: (foundation, rest of the sheet is higher only)

Using the graphs of the trig functions we can find some useful values of each function at certain values of x. You will need to be able to remember ALL of the values below:

$\sin 30^{\circ} = \frac{1}{2}$	$\sin 60^{\circ} = \frac{\sqrt{3}}{2}$	$\sin 45^{\circ} = \frac{1}{\sqrt{2}}$
$\cos 30^{\circ} = \frac{\sqrt{3}}{2}$	$\cos 60^{\circ} = \frac{1}{2}$	$\cos 45^{\circ} = \frac{1}{\sqrt{2}}$
$\tan 30^{\circ} = \frac{1}{\sqrt{3}}$	$\tan 60^{\circ} = \sqrt{3}$	$\tan 45^{\circ} = 1$

$\sin 0^{\circ} = 0$	$\sin 90^{\circ} = 1$
$\cos 0^{\circ} = 1$	$\cos 90^{\circ} = 0$
$\tan 0^{\circ} = 0$	

You can't use triangles to work these ones out sadly — you just have to learn them.

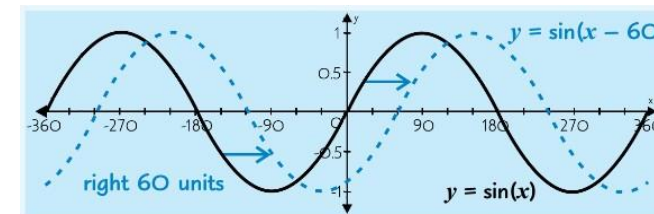
Transforming Trigonometric Graphs:

Translations:

The graphs of the trig functions can be translated, moved either up, down, left or right, by making the following alterations where a is a constant:

Translation	Change to Function
None	$y = f(x)$
Up	$y = f(x) + a$
Down	$y = f(x) - a$
Left	$y = f(x + a)$
Right	$y = f(x - a)$

Example: To move $y = \sin x$ to the right 60 units we change the function to: $y = \sin(x - 60)$



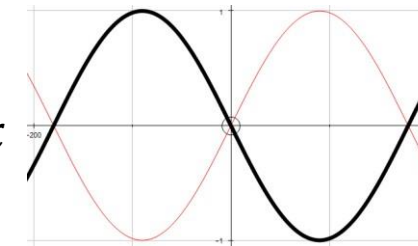
Reflections:

The graphs can be reflected in either the y or x axes by making the following alterations:

Reflection	Change to Function
y axis	$y = f(-x)$
x axis	$y = -f(x)$

$$y = \sin x$$

$$y = -\sin x$$



Linked Prior Topics: Trigonometry, plotting graphs, translation, reflection, degrees, RA triangles.

Vocabulary: Plotting, degrees, wave, graph, infinity, oscillate, Sine, Cosine, Tangent, transformation, reflection, constant.

Linked Future Topics: radians, trig identities, further transformations, modulus of a function, solving trig functions.