3055 BA SANGAM COLLEGE

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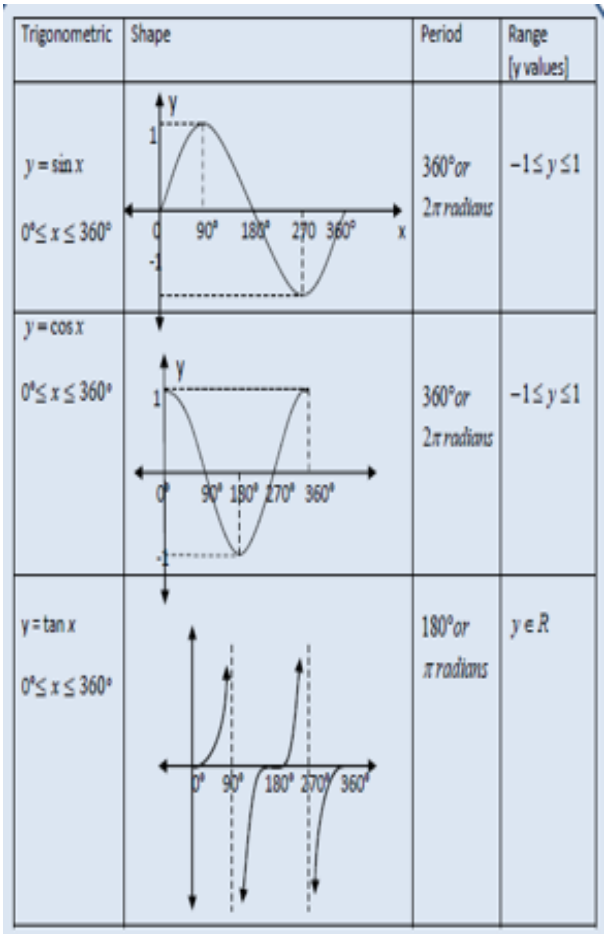
WORKSHEET 24

School: Ba Sangam College **Year / Level: 11**

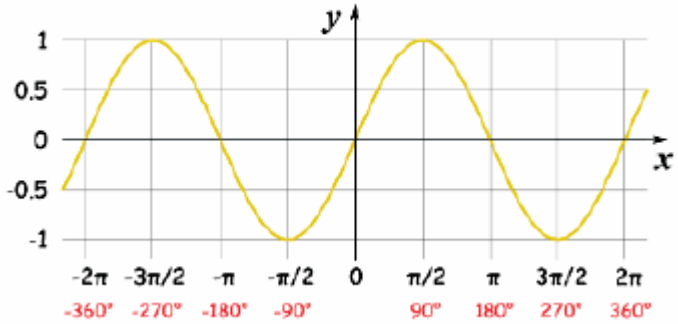
Subject: Mathematics **Name of Student: _____**

Strand	TRIGONOMETRIC GRAPHS
Sub strand	Sine, Cosine and Tangent Graphs
Content Learning Outcome	To sketch basic trigonometric graphs



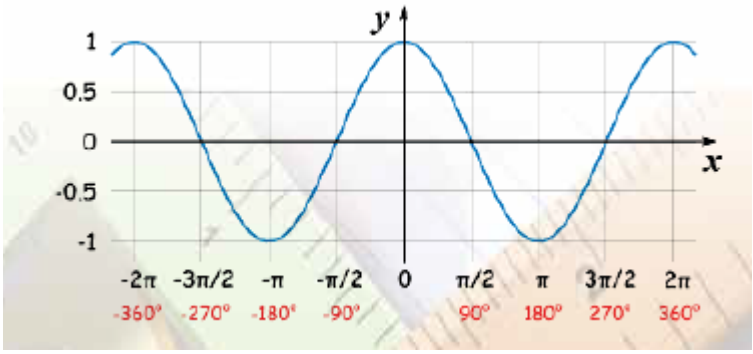
Sine Graph

The Sine Function has this beautiful up-down curve (which repeats every 2π radians, or 360°). It starts at 0, heads up to 1 by π/2 radians (90°) and then heads down to -1.



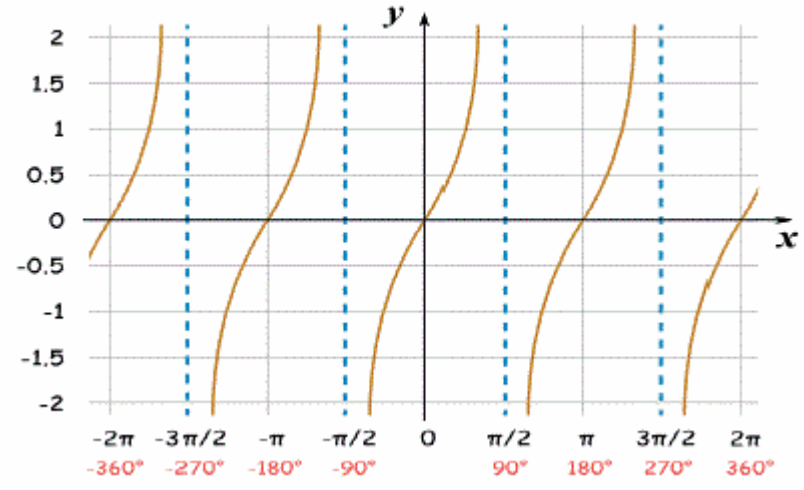
Graph of Cosine

Cosine is just like Sine, but it starts at 1 and heads down until π radians (180°) and then heads up again.



Graph of Tangent Function

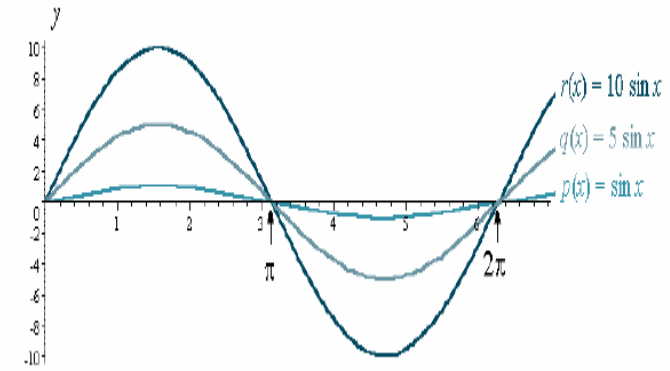
The Tangent function has a completely different shape ... it goes between negative and positive Infinity, crossing through 0 (every π radians, or 180°), as shown on this plot. At π/2 radians, or 90° (and -π/2, 3π/2, etc) the function is officially undefined, because it could be positive Infinity or negative Infinity.



Graph of Sine *x* - with varying amplitudes

We start with $y = \sin x$.
It has **amplitude** =1 and **period** =2π.
Now let's look at the graph of $y = 5 \sin x$.
This time we have amplitude = 5 and period = 2π.
(I have used a different scale on the *y*-axis.)

And now for $y = 10 \sin x$.
Amplitude = 10 and period = 2π.
For comparison, and using the same *y*-axis scale, here are the graphs of $p(x) = \sin x$, $q(x) = 5 \sin x$ and $r(x) = 10 \sin x$ on the one set of axes.
Note that the graphs have the same **period** (which is 2π) but different **amplitude**.



Graph of Cosine *x* - with varying amplitudes

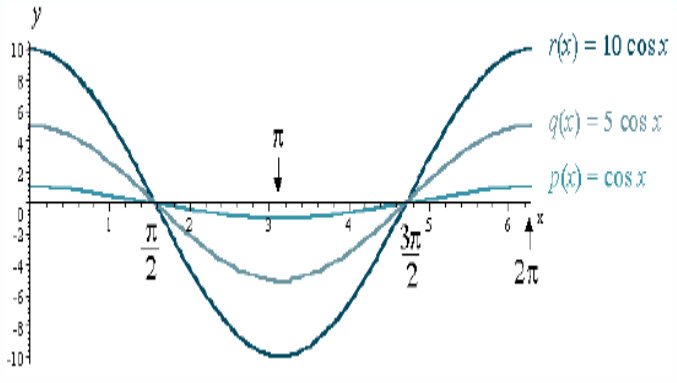
Now let's see what the graph of $y = a \cos x$ looks like. This time the angle is measured from the positive vertical axis.
Now let's have a look at the graph of the simplest cosine curve, $y = \cos x$ (= 1 cos *x*)

We note that the **amplitude** = 1 and **period** = 2π.
Similar to what we did with $y = \sin x$ above, we now see the graphs of

- $p(x) = \cos x$
- $q(x) = 5 \cos x$
- $r(x) = 10 \cos x$

on one set of axes, for comparison:

Note: For the cosine curve, just like the sine curve, the **period** of each graph is the same (2π), but the **amplitude** has changed



Exercise 1

Sketch the graph of $yx=2\mathrm{Sin}$

Exercise 2

Sketch the graph of $yx=3\mathrm{Cos}$