

33° **52**′ **37′′S** 151° 06' 04"E

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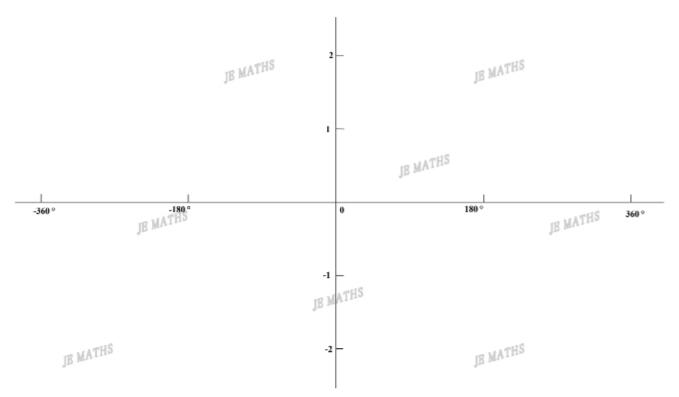
ADV



Plot 4 basic trig graphs:

1. Plot $y = \sin x$ and $y = \cos ecx$ on the same given number plane for $-360^{\circ} \le x \le 360^{\circ}$.

Х	-360°	-270°	-180°	-90°	0°	90°	180°	270°	360°
y = sinx			-	-				-	-
y = cosecx		Ŀ		-	-			1.5	



(b) Find the domain and range by filling the table below:

	y = sinx	y = cosecx
Domain		***
Range	ALC:	and .

2. Simplify the following by using the **odd** symmetry property.

 $\sin(-x) = -\sin x$ and $\cos ec(-x) = -\cos ecx$, and then check them on the graph in Q1.

(a)
$$\sin(-45^\circ) =$$

(b)
$$\sin(-120^{\circ}) =$$

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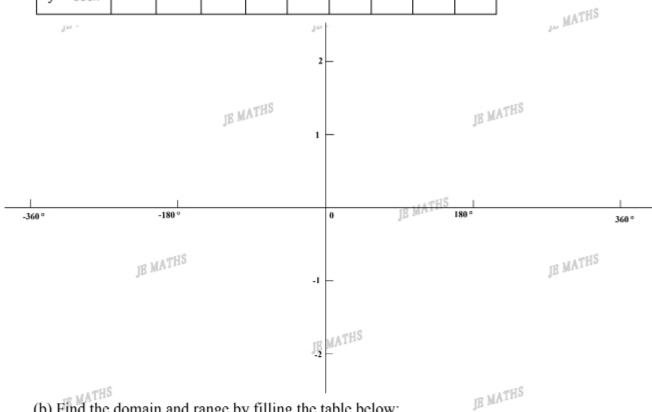
(c)
$$\cos ec(-240^{\circ}) =$$

(d)
$$\cos ec(-321^{\circ}) =$$

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3. (a) Plot $y = \cos x$ and $y = \sec x$ on the same given number plane for $-360^{\circ} \le x \le 360^{\circ}$.

х	-360°	-270°	-180°	-90°	0°	90°	180°	270°	360°
y = cosx							-	1	+
y = secx		**;	- 1		1		1.0		-



(b) Find the domain and range by filling the table below:

	y = cosx	y = secx
Domain		
Range	non-	ation

Simplify the following by using the even symmetry property:

 $\cos(-x) = \cos x$ and $\sec(-x) = \sec x$, and then check them on the graph in Q3.

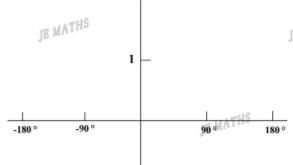
(b)
$$\cos(-100^{\circ}) =$$

(d)
$$\sec(-310^{\circ}01') =$$

- Sketch 4 basic trig graphs:

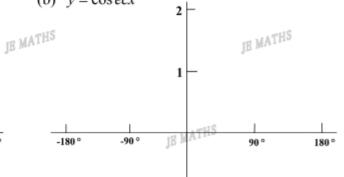
Sketch the following 4 trig functions for $-180^{\circ} \le x \le 180^{\circ}$. 5.

(a) $y = \sin x$



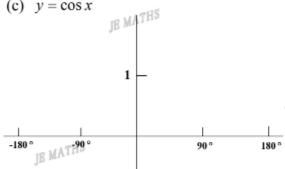
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(b) $y = \cos ecx$



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(c) $y = \cos x$



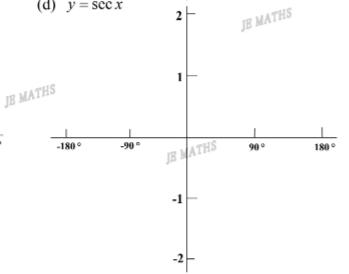
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(d) $y = \sec x$

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Simplify: 6.

(a)
$$\cos(-x) + \cos(-x)$$

(b)
$$\cos ec(-x) \times \cos ec(-x)$$

$$\begin{array}{c}
\text{(d)} \quad \frac{\cos ec(-x)}{\sec(-x)}
\end{array}$$

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- Symmetry property: $\sin(x-\theta) = -\sin(\theta-x)$ and $\cos(x-\theta) = \cos(\theta-x)$

7. Simplify:

(a) $\sin(x-360^{\circ})$

(b) $\cos(x-180^{\circ})$

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(c) $\frac{\sin(x-180^\circ)}{\cos(-x)}$

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(d) $\frac{\sin(-x)\cos(x-180^\circ)}{\cos(-x)\sin(x-180^\circ)}$

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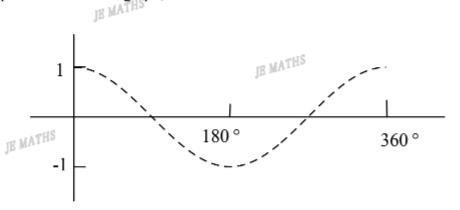
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- Reflect in the x, y-axis:

8. Sketch the following trig graphs from the basic graph, for $0 \le x \le 360^{\circ}$.

(a) $y = -\cos x$

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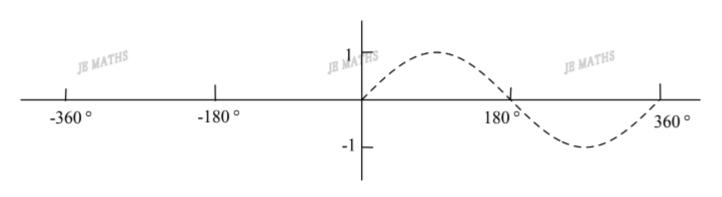


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(b) $y = \sin(-x)$

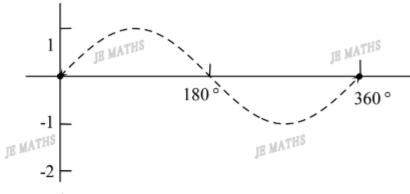
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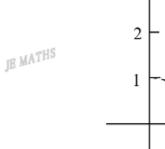
- Translate up and down:

- 9. Sketch the following trig graphs from the basic graph, for $0 \le x \le 360^{\circ}$.
 - (a) $y = \sin x 1$



(b) $y = 2 + \cos x$

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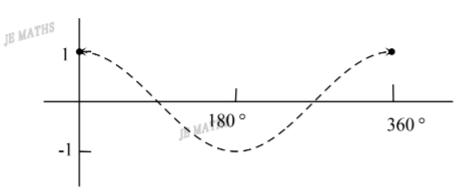
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180° 360°

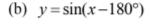
- Translate left and right:

10. Sketch the following trig graphs from the basic graph, for $0 \le x \le 360^{\circ}$.

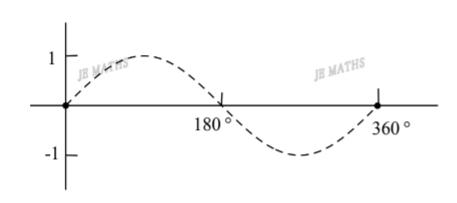
(a) $y = \cos(x + 180^\circ)$



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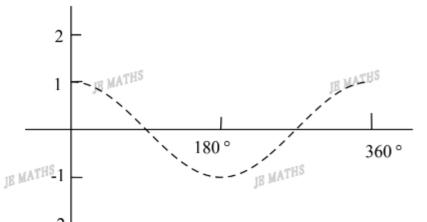


- Dilated in and out vertically:

11. Sketch the following trig graphs from the basic graph and find its **amplitude**, for $0 \le x \le 360^{\circ}$.

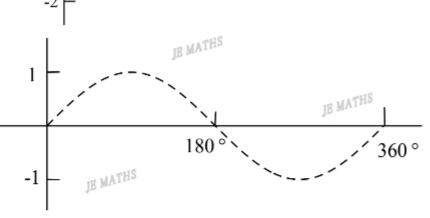
(a) $y = 2\cos x$

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(b) $y = \frac{1}{2} \sin x$

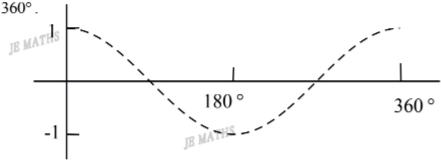
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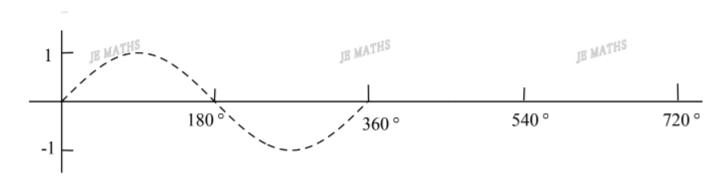
- Dilated in and out horizontally:

12. Sketch the following trig graphs from the basic graph and find its **period**.

(a) $y = \cos 2x$ for $0 \le x \le 360^\circ$.



(b) $y = \sin \frac{1}{2} x$ for $0 \le x \le 720^{\circ}$.



- Sketching mixed (2 types) trig functions:

- Given the following trigonometric functions and find the amplitude and range.
 - (a) $y = 2\sin x$

(b) $y = \frac{1}{3}\cos x$

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(c) $y = 5\cos 2x$

(d) $y = \frac{2\sin 3x}{7}$

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14. Given the following trigonometric functions and find the period.

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(a) $y = \sin 2x$

(b) $y = \cos \frac{x}{4}$

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(c) $y = 2\cos 4x$

(d) $y = \sin \frac{3x}{2}$

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- 15. From the given graph of $y = -3\sin 2x + 1$ as shown below,
 - (a) find:
 - (i) the amplitude.

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(ii) the range.

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(iii) the period.

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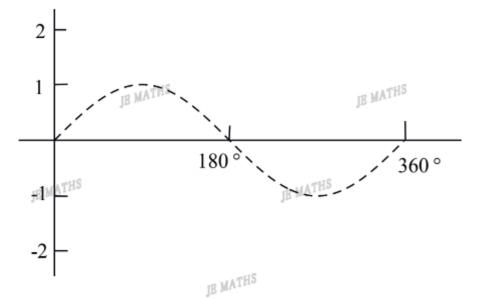
(b) Is that possible to find all questions in part (a) by looking at the function only? (yes)

16. Given that $y = -2\sin x$.

(a) Find the period.

JE MATHS (b) Sketch $y = -2\sin x$,

for $0 \le x \le 360^{\circ}$.



(c) Hence, find:

(i) the amplitude.

(ii) the range.

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17. Given that $y = -\cos 2x$.

(a) Find:

(i) the amplitude.

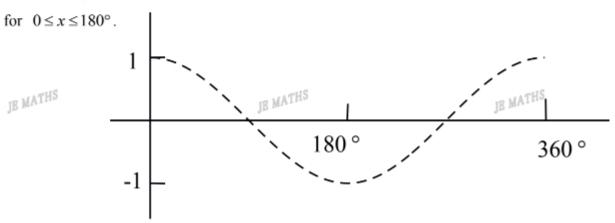
(ii) the range.

(iii) the period.

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(b) Hence, sketch $y = -\cos 2x$,

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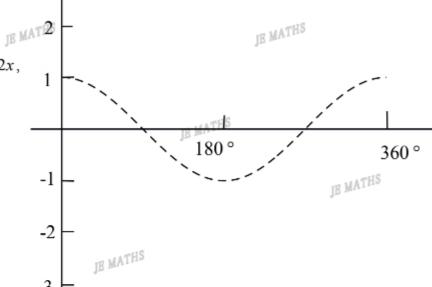


- 18. Given that $y = 3\cos 2x$.
 - (a) Find:
 - (i) the amplitude.

(ii) the range.

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- (iii) the period.
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- (b) Hence, sketch $y = 3\cos 2x$,
- for $0 \le x \le 360^{\circ}$.



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19. Given that $y = \frac{1}{2} \sin \frac{x}{2}$.

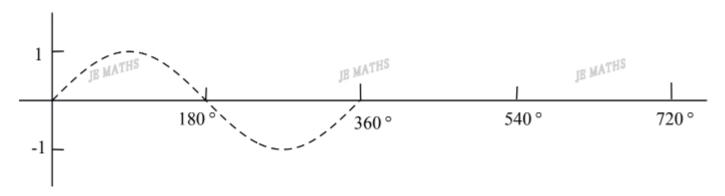
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- (a) Find:
 - (i) the amplitude.
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- (ii) the range.

(iii) the period.

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(b) Hence, sketch $y = \frac{1}{2} \sin \frac{x}{2}$, for $0 \le x \le 720^{\circ}$.



20. Given that $y = 3\sin x - 1$.

- (a) Find:
 - (i) the amplitude.

(ii) the range.

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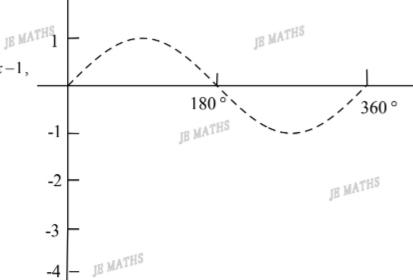
(iii) the period.

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(b) Hence, sketch $y = 3\sin x - 1$,

for $0 \le x \le 360^{\circ}$.



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21. Given that $\int y = 1 + 2\cos x$.

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(a) Find:

the amplitude.

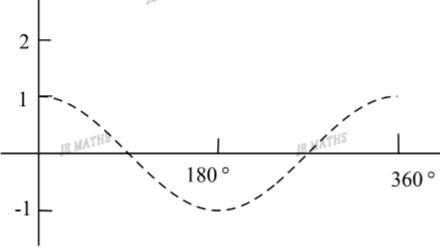
(ii) the range.

(iii) the period.

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JE MATHS (b) Hence, sketch $y=1+2\cos x$, for $0 \le x \le 360^{\circ}$.

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