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52′
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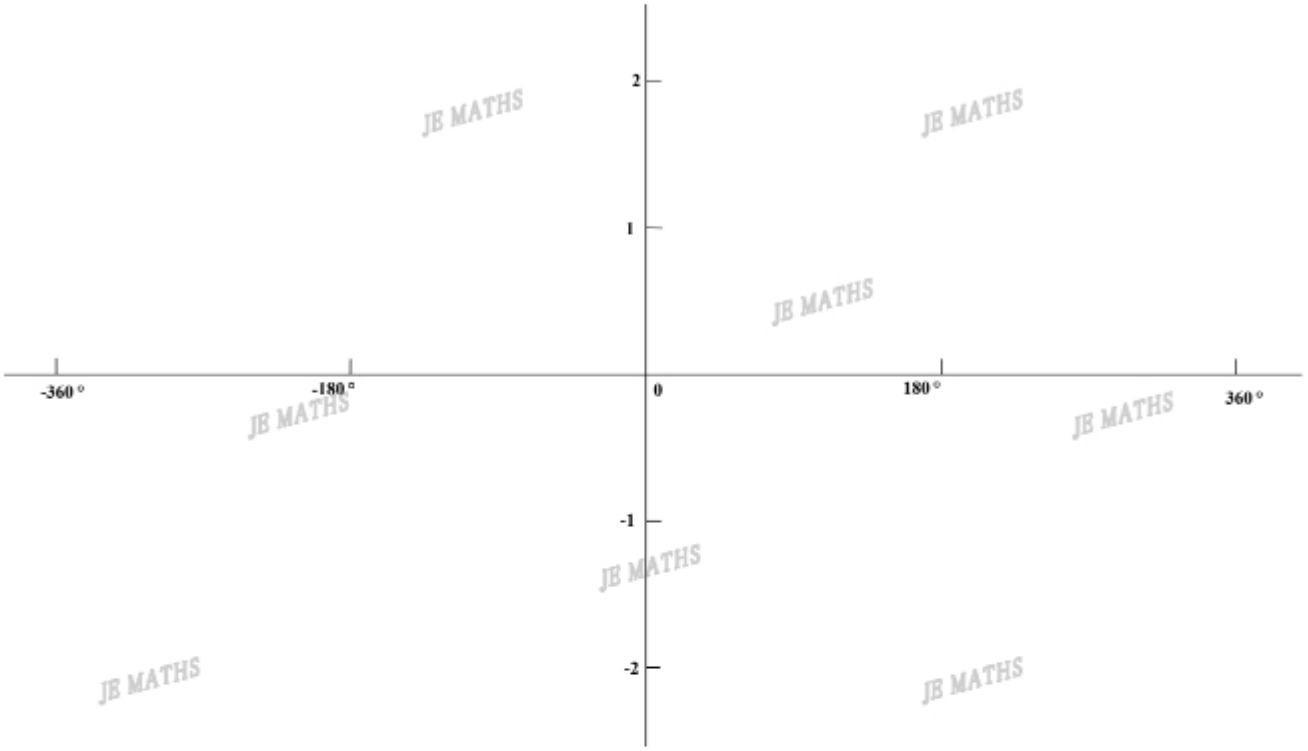
JE
MATHS

10
ADV

Plot 4 basic trig graphs:

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

x	-360 °	-270 °	-180 °	-90 °	0 °	90 °	180 °	270 °	360 °
y = sinx									
y = cosecx									



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

	y = sinx	y = cosecx
Domain		
Range		

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) $\sin(-45°) =$

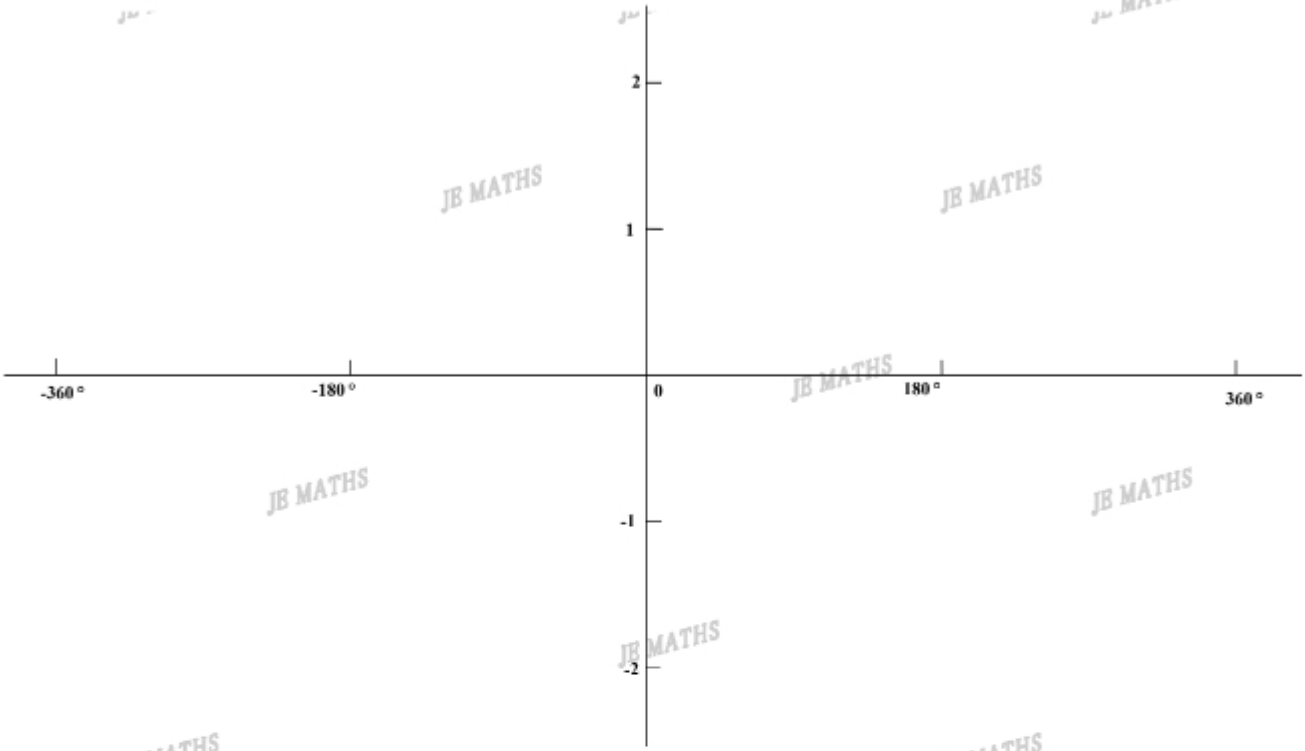
(b) $\sin(-120°) =$

(c) $\cos ec(-240°) =$

(d) $\cos ec(-321°) =$

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

x	-360 °	-270 °	-180 °	-90 °	0 °	90 °	180 °	270 °	360 °
y = cosx									
y = secx									



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

	y = cosx	y = secx
Domain		
Range		

4. 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.

(a) $\cos(-62°) =$

(b) $\cos(-100°) =$

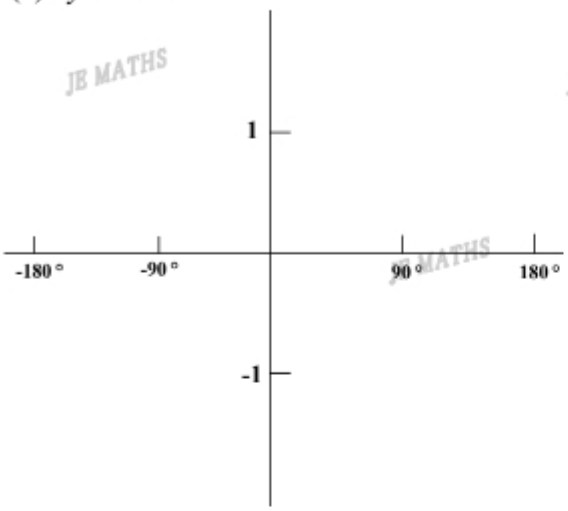
(c) $\sec(-249.2°) =$

(d) $\sec(-310°01') =$

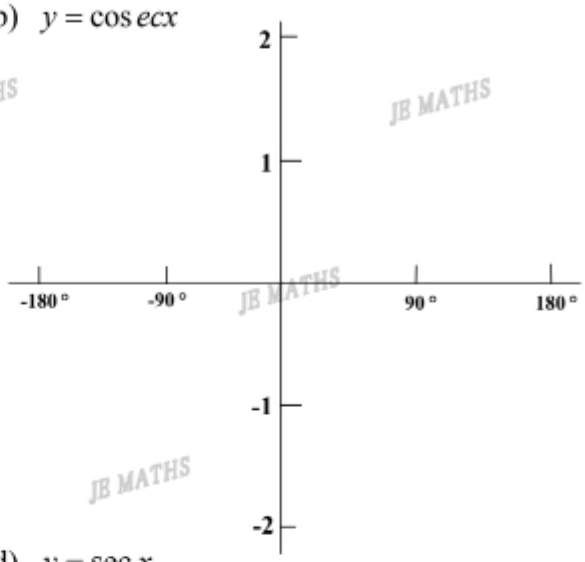
- Sketch 4 basic trig graphs:

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

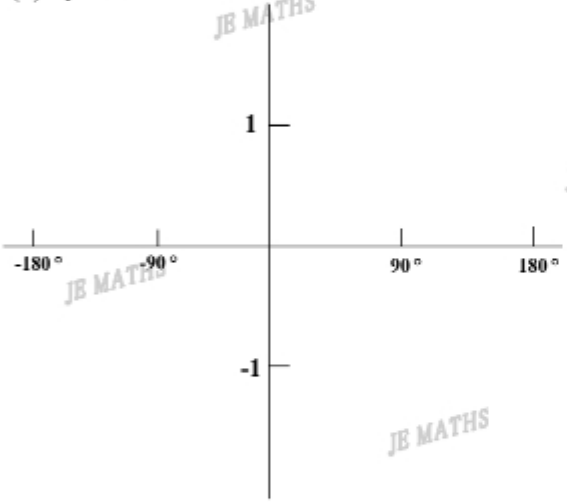
(a) $y = \sin x$



(b) $y = \cos ecx$



(c) $y = \cos x$



(d) $y = \sec x$

6. Simplify:

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

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

(c) $\dfrac{\sin(-x)}{\cos(-x)}$

(d) $\dfrac{\cos ec(-x)}{\sec(-x)}$

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

7. Simplify:

(a) $\sin(x-360°)$

(b) $\cos(x-180°)$

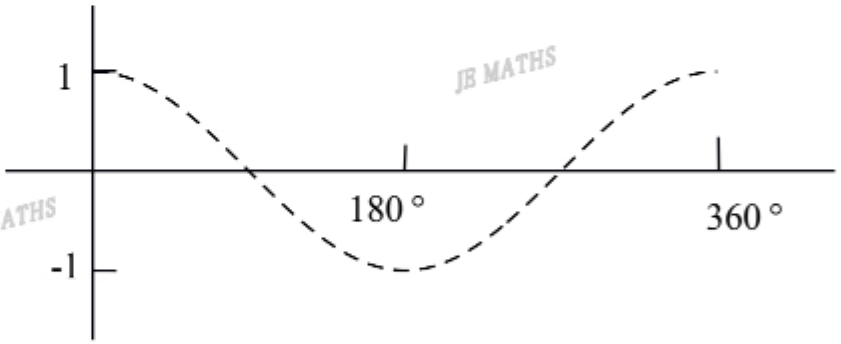
(c) $\dfrac{\sin(x-180°)}{\cos(-x)}$

(d) $\dfrac{\sin(-x)\cos(x-180°)}{\cos(-x)\sin(x-180°)}$

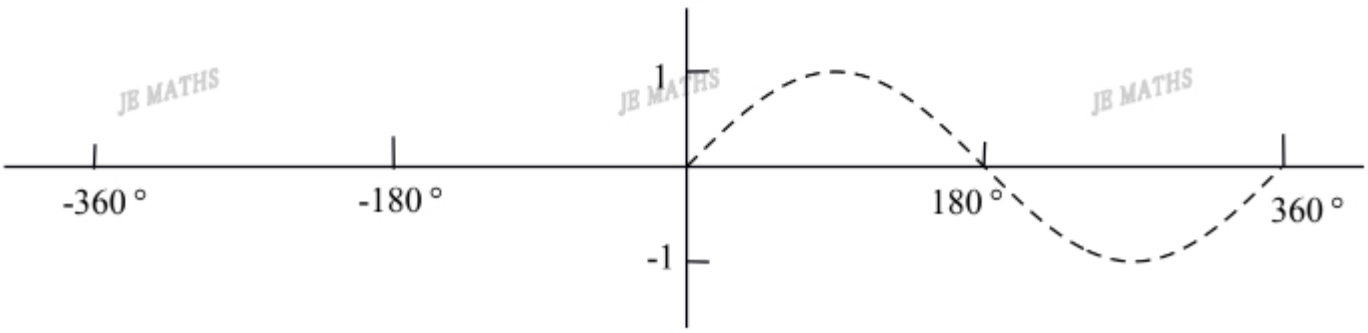
- Reflect in the x, y-axis:

8. Sketch the following trig graphs from the basic graph, for $0\le x\le 360°$.

(a) $y=-\cos x$



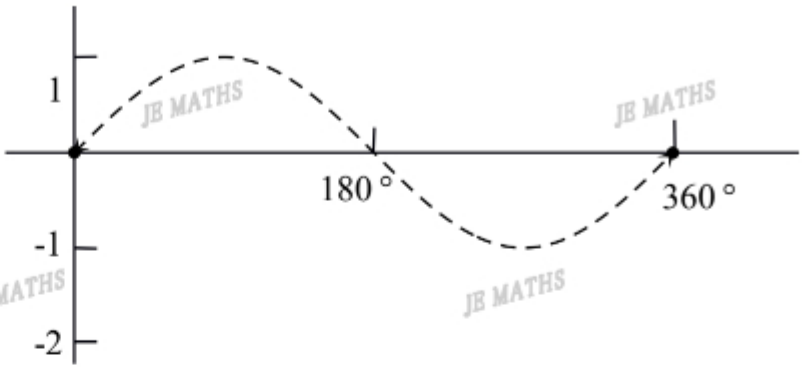
(b) $y=\sin(-x)$



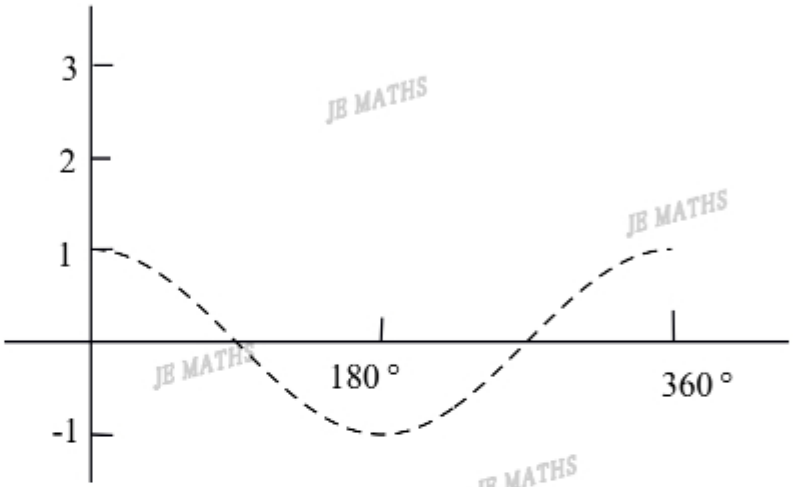
- Translate up and down:

9. Sketch the following trig graphs from the basic graph, for $0 \le x \le 360°$.

(a) $y = \sin x - 1$



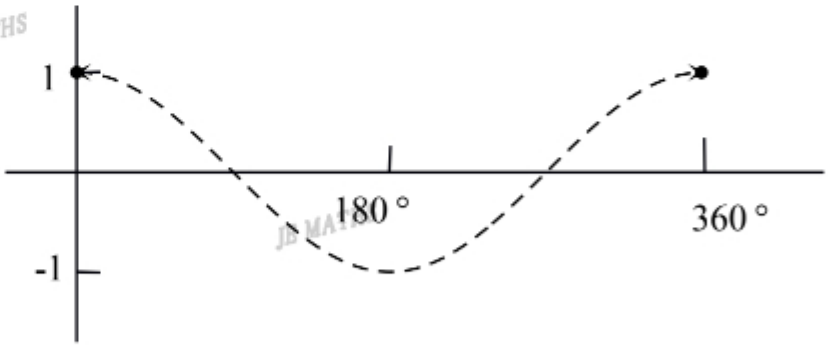
(b) $y = 2 + \cos x$



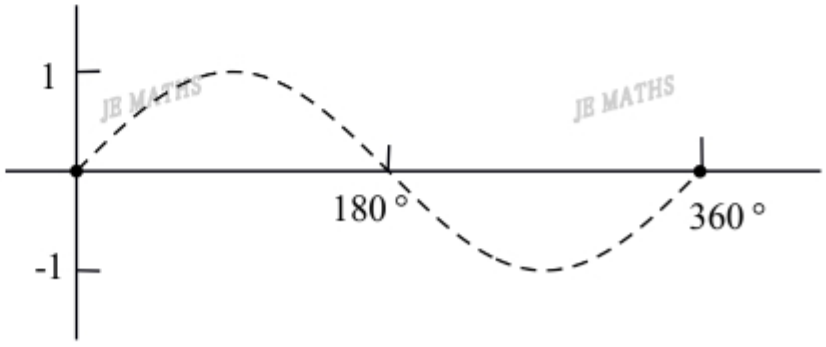
- Translate left and right:

10. Sketch the following trig graphs from the basic graph, for $0 \le x \le 360°$.

(a) $y = \cos(x + 180°)$



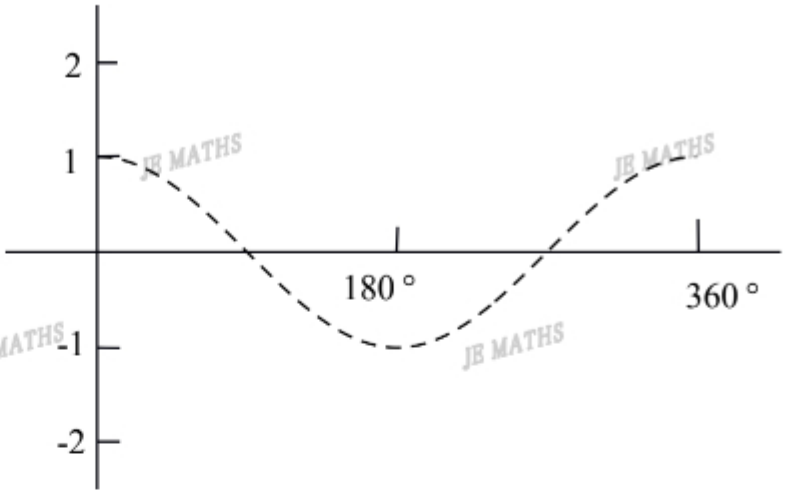
(b) $y = \sin(x - 180°)$



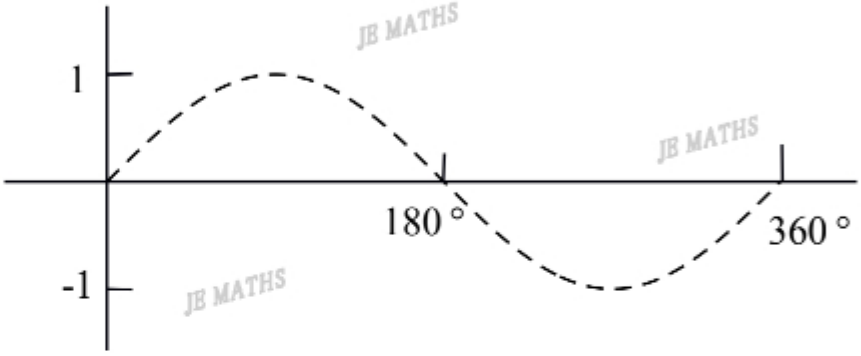
- Dilated in and out vertically:

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

(a) $y = 2\cos x$



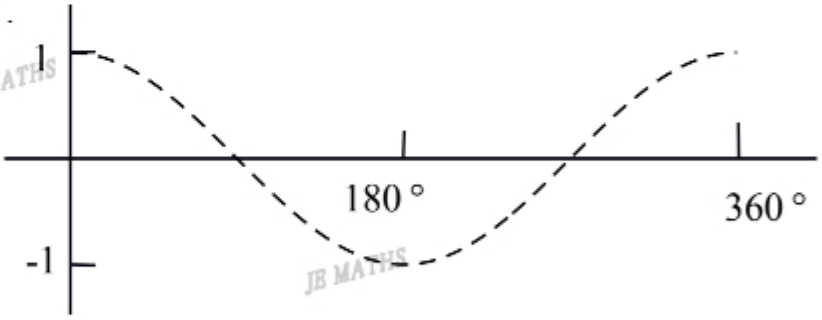
(b) $y = \frac{1}{2}\sin x$



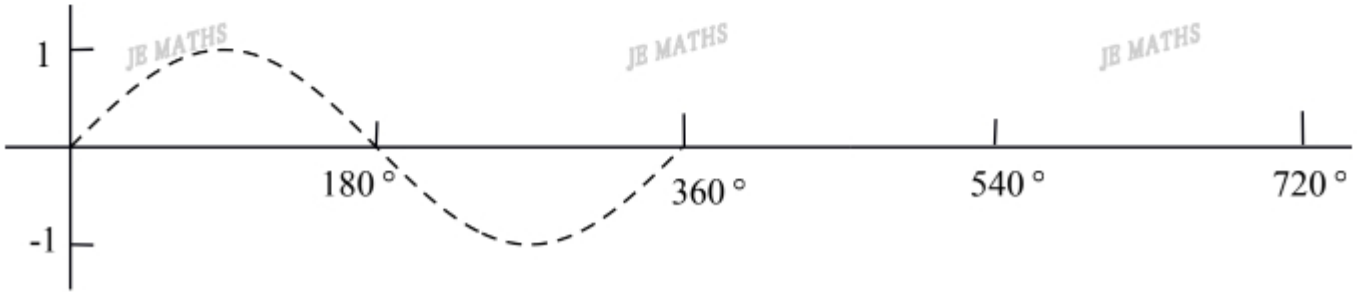
- Dilated in and out horizontally:

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

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



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



- Sketching mixed (2 types) trig functions:

13. Given the following trigonometric functions and find the amplitude and range.

(a) $y = 2\sin x$

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

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

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

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

(a) $y = \sin 2x$

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

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

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

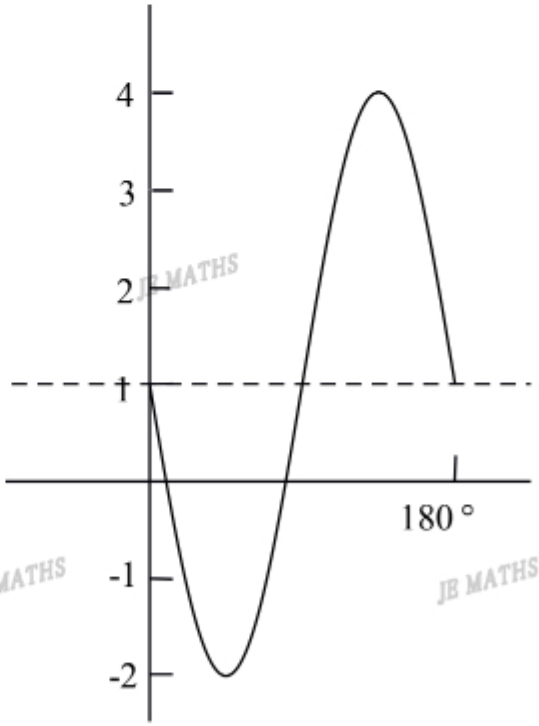
15. From the given graph of $y = -3\sin 2x + 1$ as shown below,

(a) find:

(i) the amplitude.

(ii) the range.

(iii) the period.



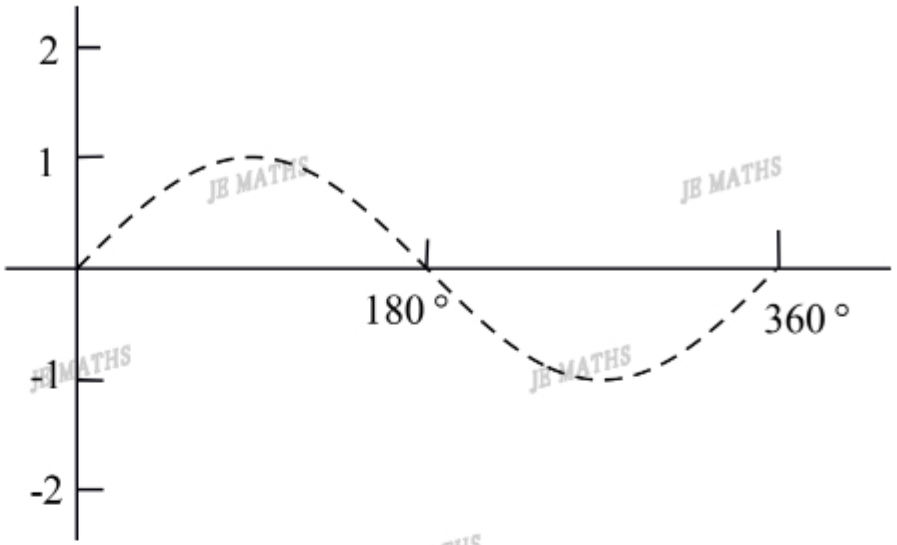
(b) Is that possible to find all questions in part (a) by looking at the function **only**?
(yes)

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

(a) Find the period.

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

for $0 \le x \le 360°$.



(c) Hence, find:

(i) the amplitude.

(ii) the range.

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

(a) Find:

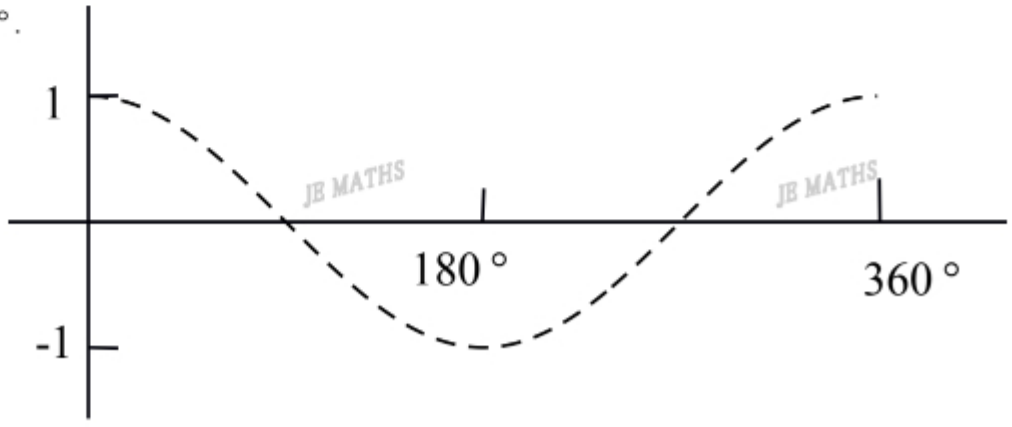
(i) the amplitude.

(ii) the range.

(iii) the period.

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

for $0 \le x \le 180°$.



18. Given that $y = 3\cos 2x$.

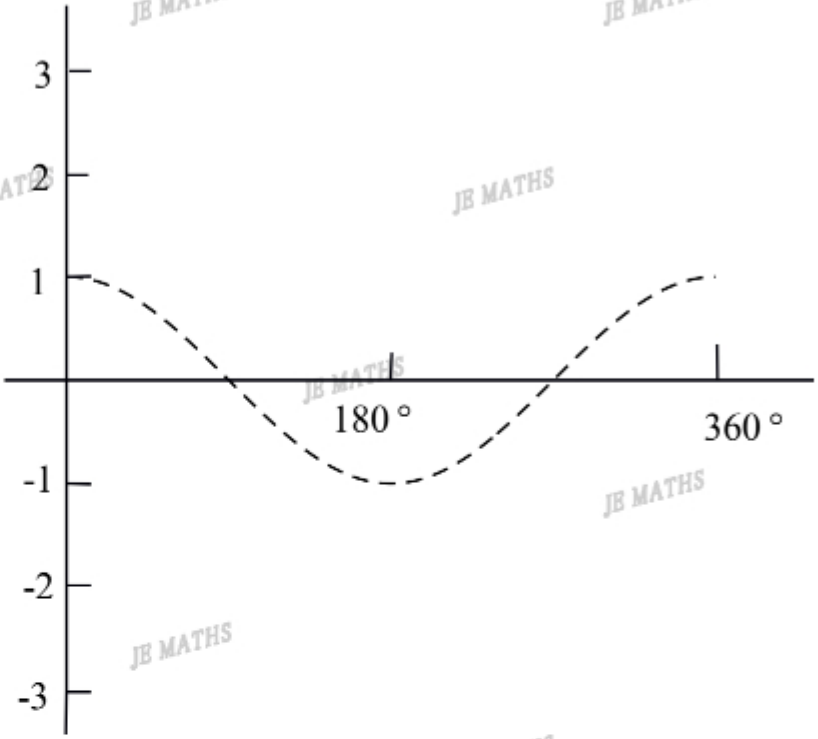
(a) Find:

(i) the amplitude.

(ii) the range.

(iii) the period.

(b) Hence, sketch $y = 3\cos 2x$, for $0 \le x \le 360°$.



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

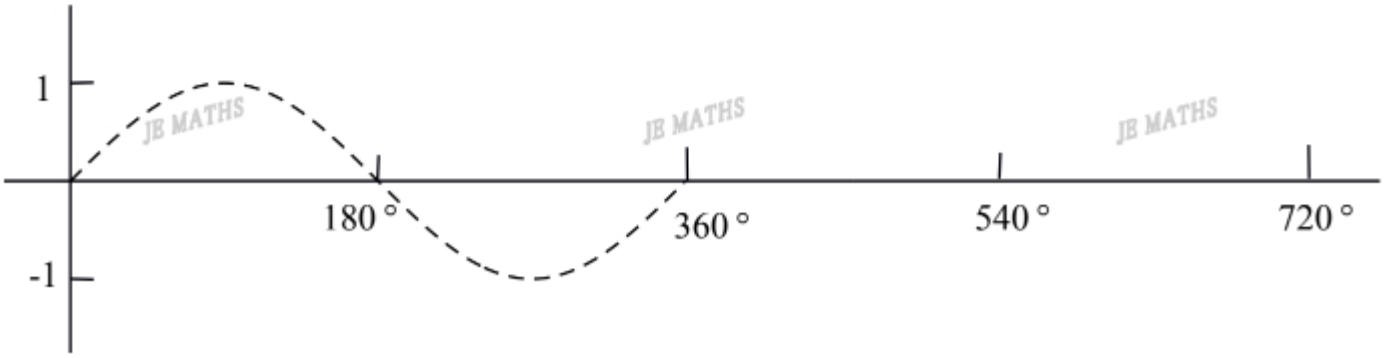
(a) Find:

(i) the amplitude.

(ii) the range.

(iii) the period.

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



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

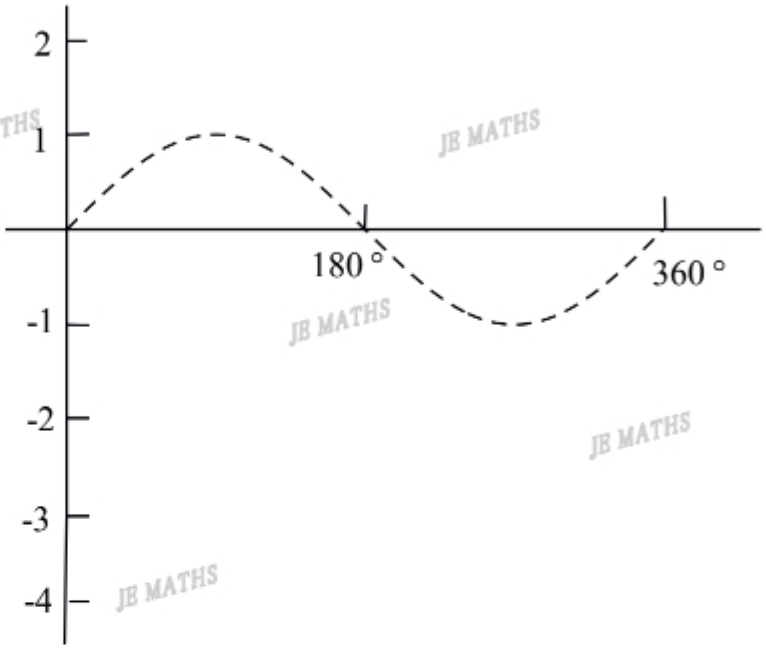
(a) Find:

(i) the amplitude.

(ii) the range.

(iii) the period.

(b) Hence, sketch $y = 3\sin x - 1$, for $0 \le x \le 360°$.



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

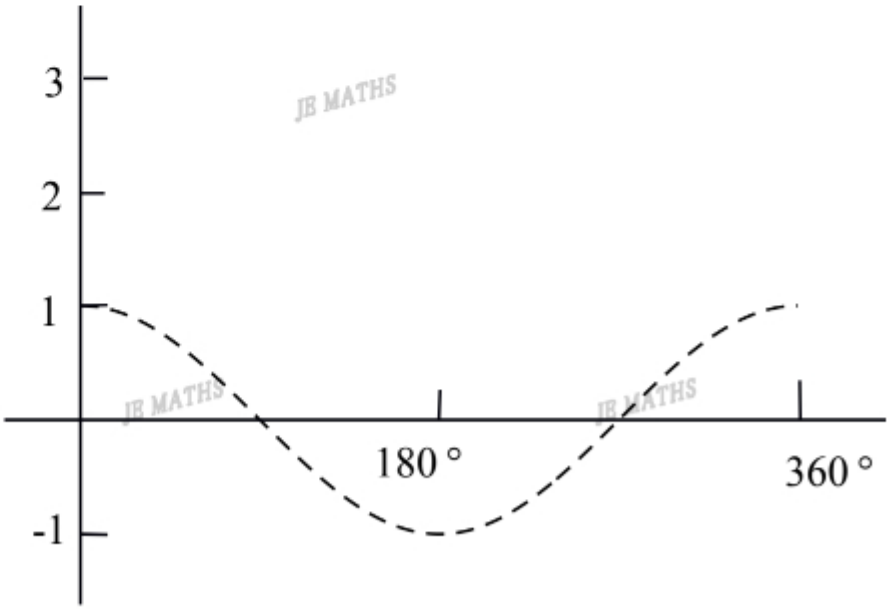
(a) Find:

(i) the amplitude.

(ii) the range.

(iii) the period.

(b) Hence, sketch $y = 1 + 2\cos x$, for $0 \le x \le 360°$.



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