

Standard Grade

Trigonometry 8

The Graphs of $asinbx$ and $acosbx$

1. a) Copy and complete the table of values below.

x°	0	30	60	90	120	150	180	210	240	270	300	330	360
$\sin x^\circ$		0.5		1			0		-0.87				0
$2\sin x^\circ$		1							-1.73				0

- b) Use the worksheet/graph paper provided and your table of values to draw the graphs of $y = \sin x$ and $y = 2 \sin x$ on the same diagram.
- c) From the graphs, state the maximum and minimum values of $y = \sin x$ and $y = 2 \sin x$.
- d) From the graphs, state the period of $y = \sin x$ and $y = 2 \sin x$.
- e) Write down the maximum and minimum values of the graphs;-
i) $y = 3 \sin x$ and ii) $y = 5 \sin x$
- f) Draw rough sketches of the following graphs;-
i) $y = 3 \sin x$ and ii) $y = 5 \sin x$ (use separate diagrams).
- g) State the maximum value of $y = \frac{1}{2} \sin x$.
- h) State the maximum and minimum values of $y = a \sin x$.

2. a) Copy and complete the table of values below.

x°	0	30	60	90	120	150	180	210	240	270	300	330	360
$\sin x^\circ$		0.5		1			0		-0.87				0
$\sin 2x^\circ$		0.87							0.87				

- b) Use the worksheet/graph paper provided and your table of values to draw the graphs of $y = \sin x$ and $y = \sin 2x$ on the same diagram.
- c) From the graphs, state the maximum and minimum values of $y = \sin x$ and $y = \sin 2x$.
- d) From the graphs, state the period of $y = \sin x$ and $y = \sin 2x$.
- e) Write down the period of the graphs;-
i) $y = \sin 3x$ and ii) $y = \sin 5x$
- f) Draw rough sketches of the following graphs;-
i) $y = \sin 3x$ and ii) $y = \sin 5x$ (use separate diagrams).
- g) Write down the period of $y = \sin(\frac{1}{2}x)$.
- h) What will be the period of $y = \sin bx$?

3. Draw a rough sketch of $y = \cos x$ and $y = 2 \cos x$ on the same diagram. State the maximum, minimum and period of both graphs.

For each of the following, draw a rough sketch of the graph and state the maximum, minimum and period.

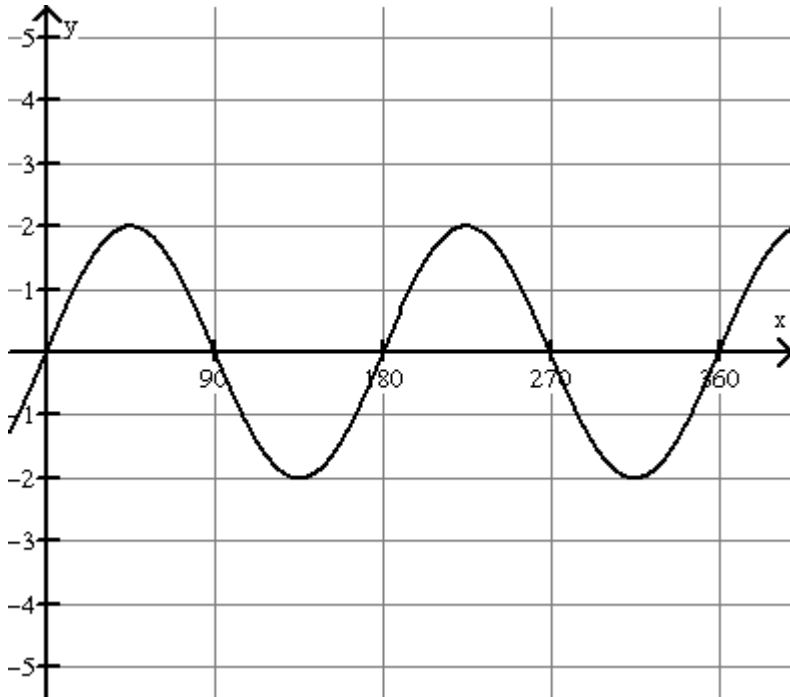
4. $y = \cos 2x$

5. $y = 2 \cos 2x$

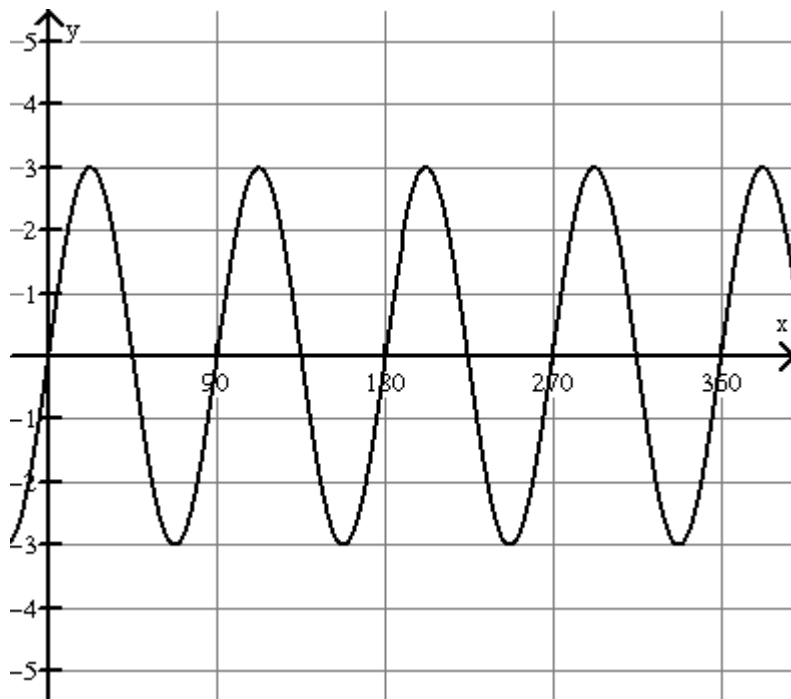
6. $y = 5 \sin 2x$

7. Identify the following graphs (for use with projector or OHP)

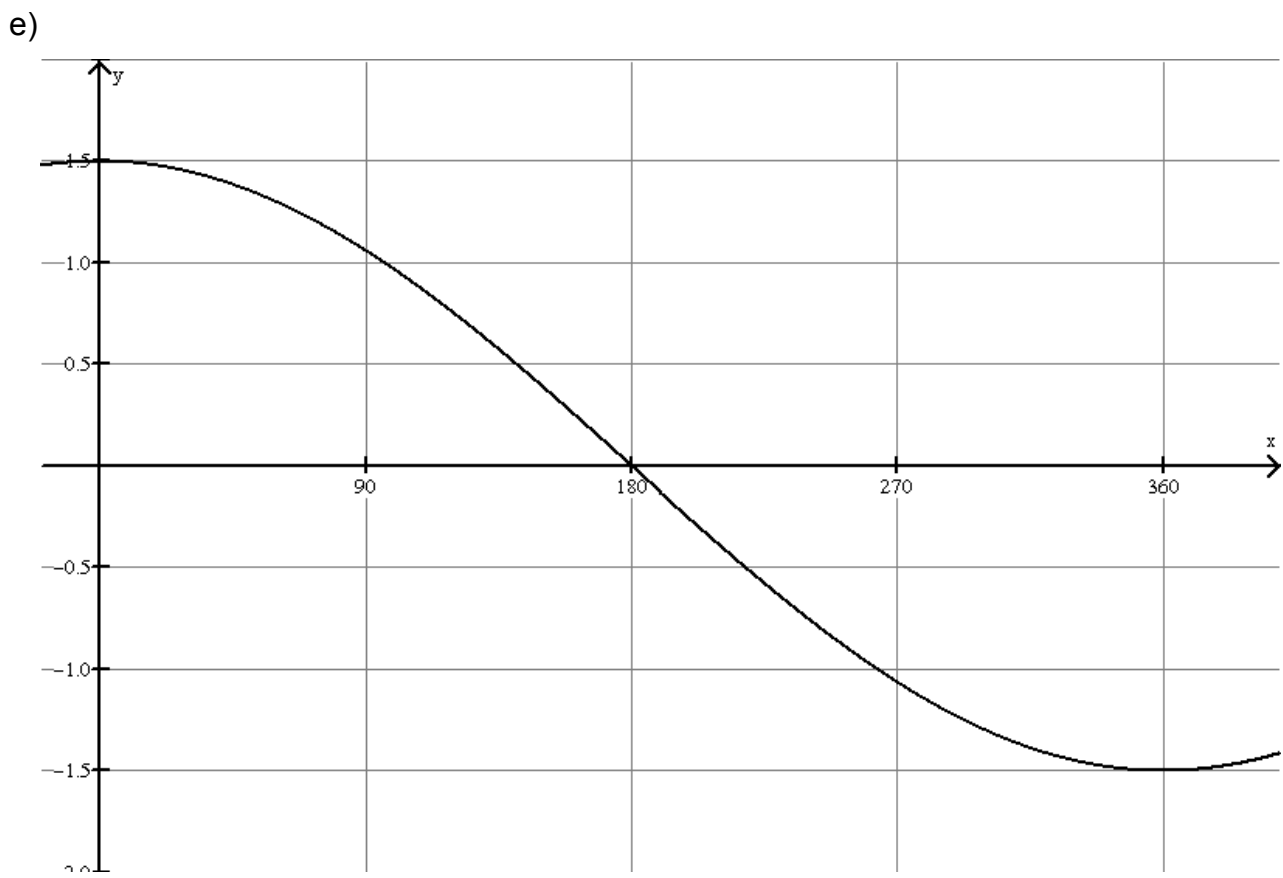
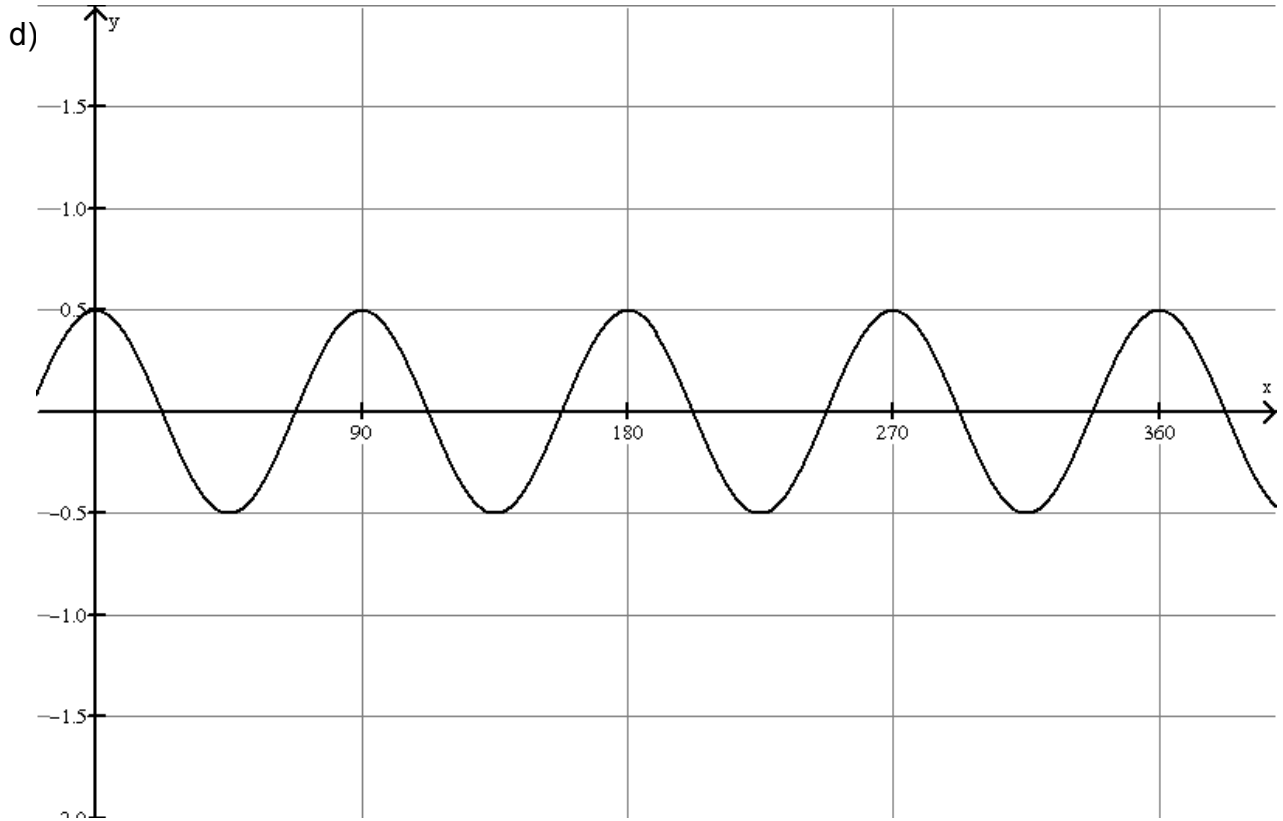
a)



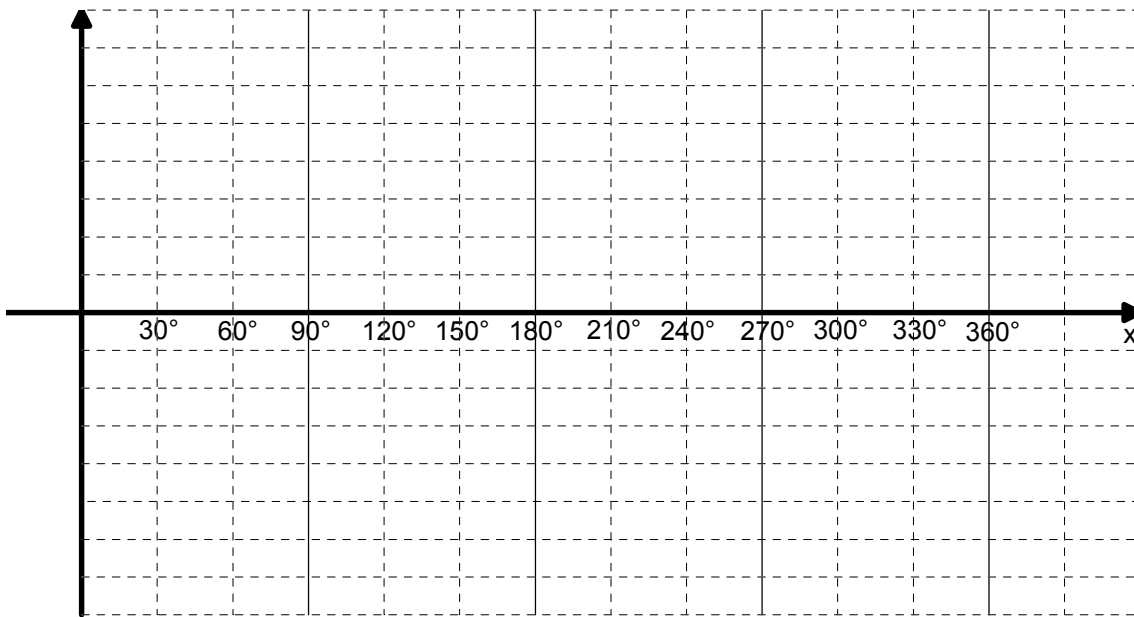
b)



7. Identify the following graphs (for use with projector or OHP)

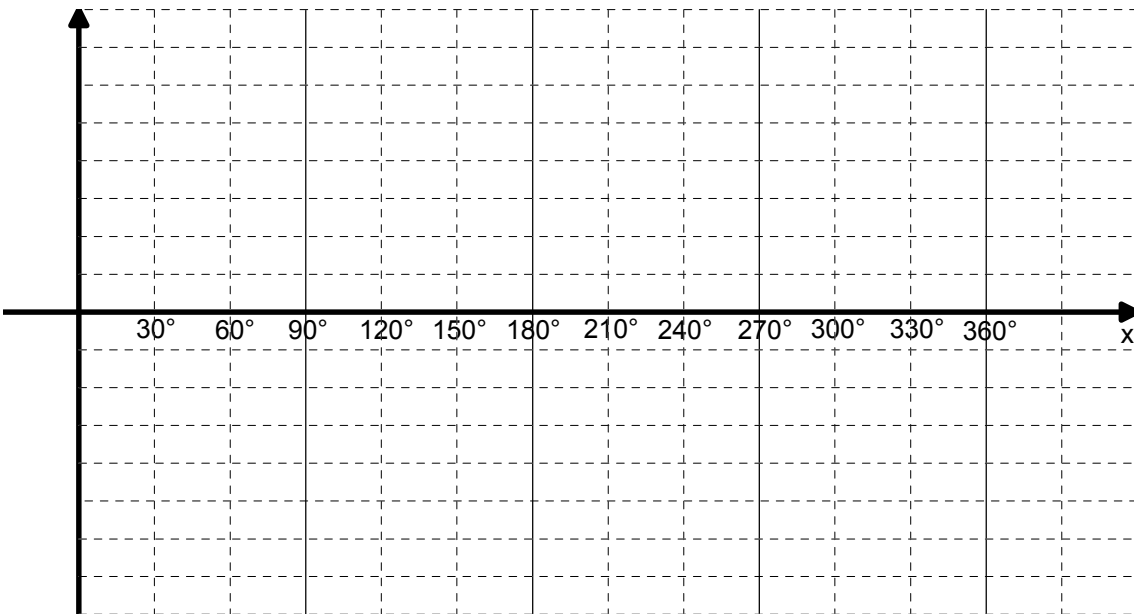


Worksheet for Trigonometry 8 (questions 1a,b,c,d and 2a,b,c,d)



$y = \sin x$, Maximum = _____ Minimum = _____ Period = _____

$y = 2 \sin x$, Maximum = _____ Minimum = _____ Period = _____



$y = \sin x$, Maximum = _____ Minimum = _____ Period = _____

$y = \sin 2x$, Maximum = _____ Minimum = _____ Period = _____

Answers

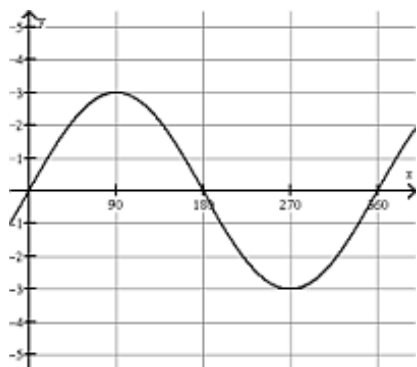
1. c) $y=\sin x$: max=1, min=-1 $y=2\sin x$: max=2, min=-2

d) $y=\sin x$: period=360°, $y=2\sin x$: period=360°

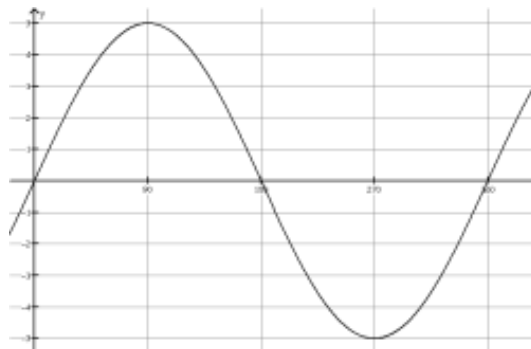
e) i) $y=3\sin x$: max=3, min=-3

ii) $y=5\sin x$: max=5, min=-5

f) i)



ii)



g) $y=0.5\sin x$: max=0.5

h) $y=a\sin x$: max=a, min=-a

2. c) $y=\sin x$: max=1, min=-1

$y=\sin 2x$: max=1, min=-1

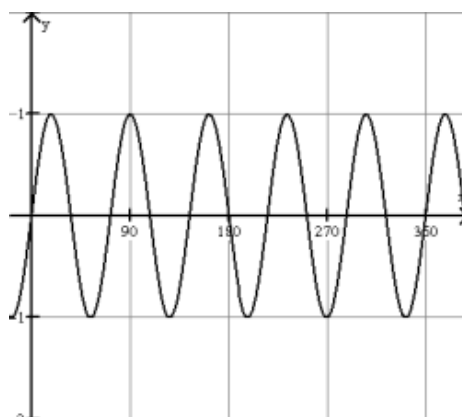
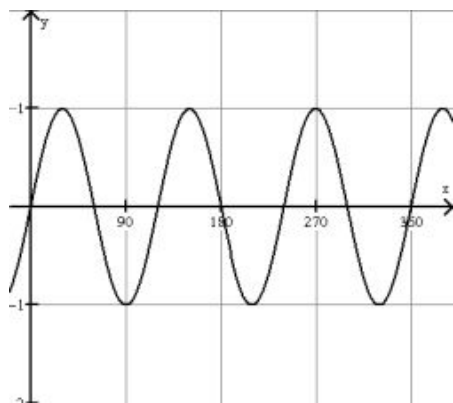
d) $y=\sin x$: period=360°

$y=\sin 2x$: period=180°

e) $y=\sin 3x$: period=120°

$y=\sin 5x$: period=72°

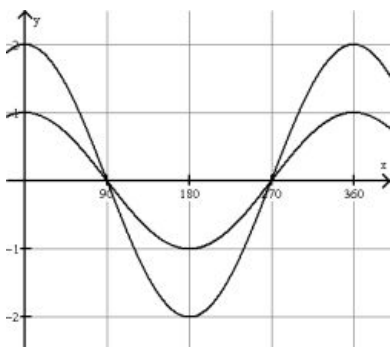
f) i)



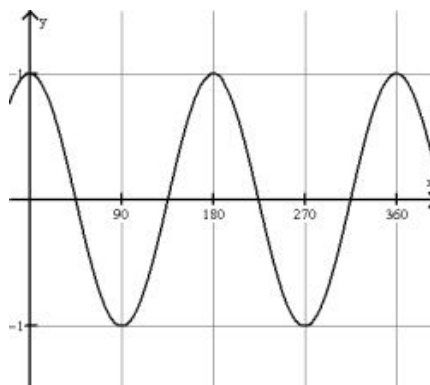
g) $y=\sin(0.5x)$: period=720°

h) $y=\sin bx$: period = 360/b

3.



4.



$y=\cos x$: max=1, min=-1 period=360°

$y=2\cos x$: max=2, min=-2 period=360°

$y=2\cos x$: max=2, min=-2 period=360°

5. $y=2\cos 2x$: max=2, min=-2, period=180°

6. $y=5\sin 2x$: max=5, min=-5, period=180°

7. You teacher will advise.