

Trigonometric Graphs

For AQA GCSE Mathematics (8300) • Higher tier

Name _____

Total marks: **22**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method. You may use a calculator.

1 Circle the value of $\sin 270^\circ$

[1 mark]

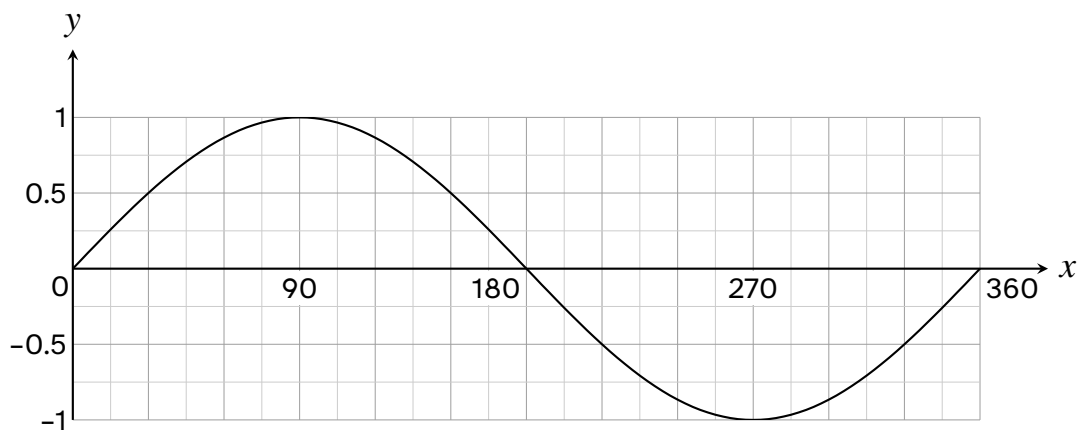
2 Here are four statements about the graphs of $y = \sin x$, $y = \cos x$ and $y = \tan x$ for $0 \leq x \leq 360$

For each statement, tick the correct box.

[2 marks]

	True	False
$y = \cos x$ has a minimum point at $(180, -1)$	☐	☐
$y = \tan x$ has an asymptote at $x = 180$	☐	☐
$y = \sin x$ and $y = \cos x$ cross the x -axis at the same points	☐	☐
The largest value of $\sin x$ is 1	☐	☐

3 Here is the graph of $y = \sin x$ for $0 \leq x \leq 360$



(a) Write down the coordinates of the maximum point.

[1 mark]

Answer (_____ , _____)

(b) Use the graph to solve $\sin x = 0.5$ for $0 \leq x \leq 360$

[2 marks]

Answer _____

(c) Write down the number of solutions of $\sin x = -0.8$ for $0 \leq x \leq 360$

[1 mark]

Answer _____

4 Circle the value of x , between 0° and 360° , for which $\cos x = \cos 70^\circ$ and $x \neq 70^\circ$

[1 mark]

110°

250°

290°

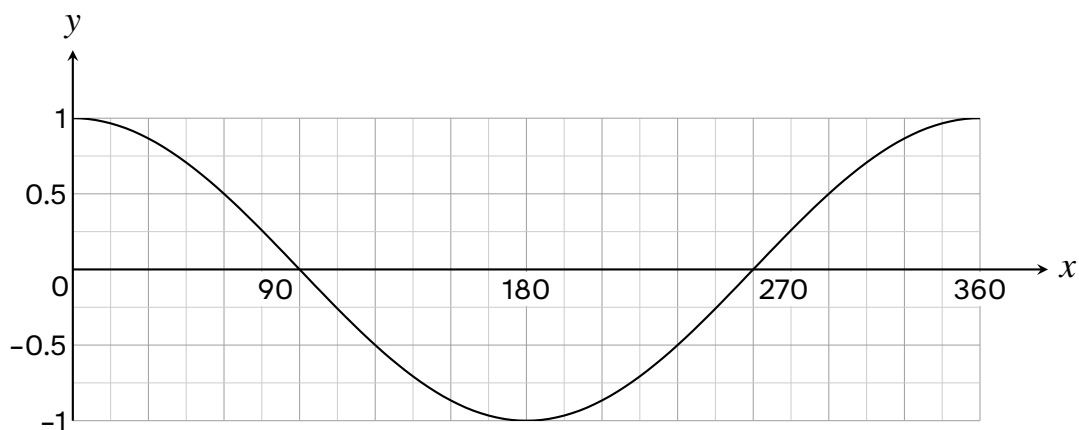
340°

- 5 $\sin 40^\circ = 0.643$ to 3 decimal places.
Write down another angle between 0° and 360° with $\sin x = 0.643$

[1 mark]

Answer _____ degrees

- 6 Here is the graph of $y = \cos x$ for $0 \leq x \leq 360$



- (a) Solve $\cos x = -0.5$ for $0 \leq x \leq 360$

[2 marks]

Answer _____

- (b) $\cos 35^\circ = 0.819$ to 3 decimal places.
Write down the value of $\cos 325^\circ$

[1 mark]

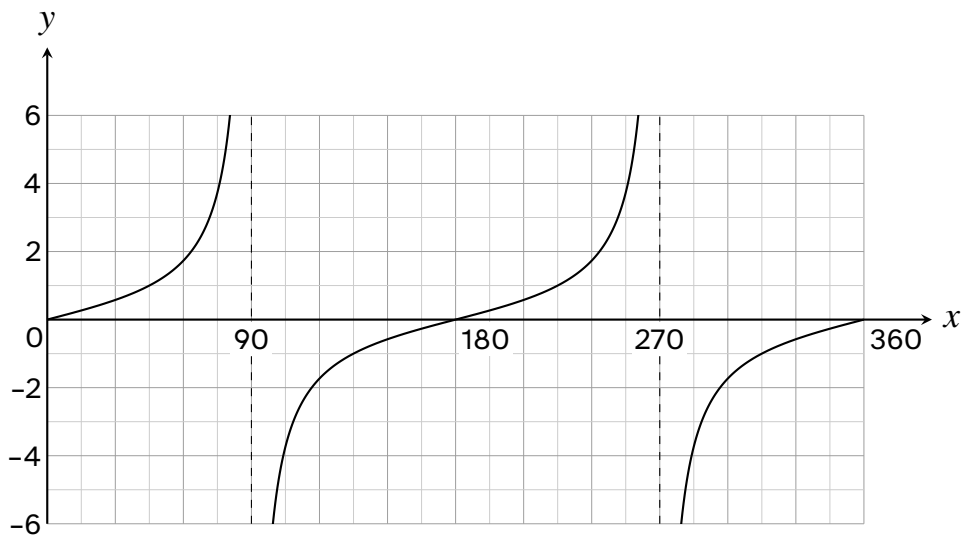
Answer _____

- (c) Write down the value of $\cos 215^\circ$

[1 mark]

Answer _____

- 7 Here is the graph of $y = \tan x$ for $0 \leq x \leq 360$



- (a) Write down the equations of the asymptotes of the graph.

[2 marks]

Answer _____

- (b) You are given that $\tan x = 3$ when $x = 71.57^\circ$ (to 2 decimal places).
Work out the other value of x where $\tan x = 3$ and $0^\circ \leq x \leq 360^\circ$

[1 mark]

Answer _____ $^\circ$

- (c) Work out the two values of x where $\tan x = -3$ and $0^\circ \leq x \leq 360^\circ$

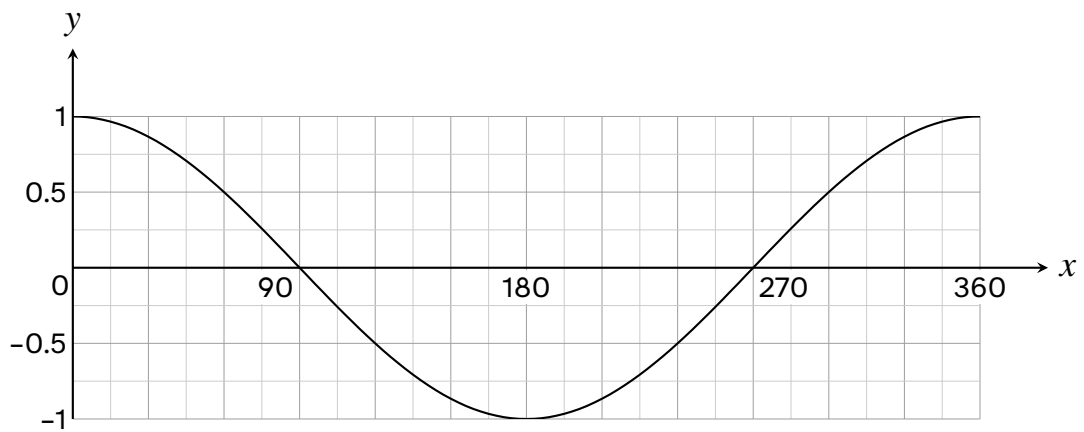
[2 marks]

Answer _____ $^\circ$ and _____ $^\circ$

8 θ is an acute angle.

$$\cos \theta = c$$

Here is the graph of $y = \cos x$ for $0 \leq x \leq 360$

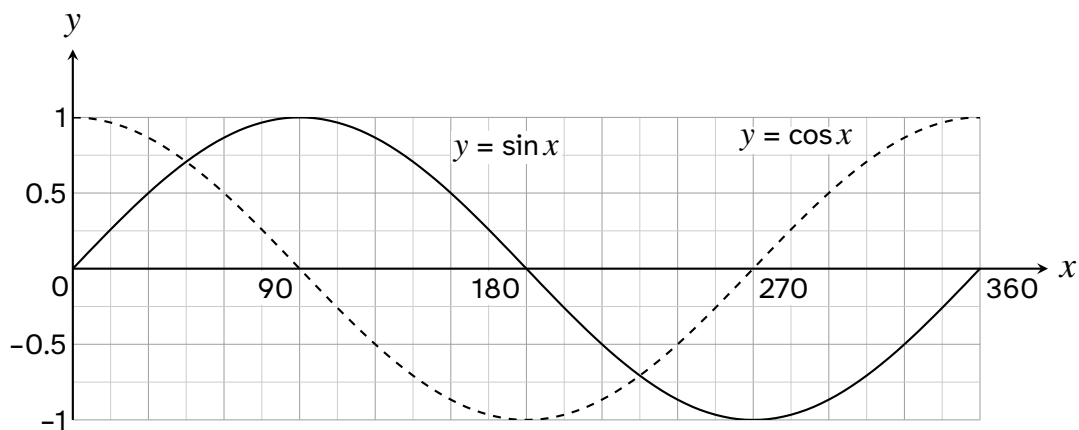


For each expression, tick whether it is equal to c or equal to $-c$

[2 marks]

	Equal to c	Equal to $-c$
$\cos(180^\circ - \theta)$	☐	☐
$\cos(360^\circ - \theta)$	☐	☐
$\cos(180^\circ + \theta)$	☐	☐
$\cos(-\theta)$	☐	☐

- 9 The graphs of $y = \sin x$ and $y = \cos x$ are drawn on the grid for $0 \leq x \leq 360$



- (a) Write down the number of points where the two graphs intersect.

[1 mark]

Answer _____

- (b) Write down the x -coordinates of the points where the two graphs intersect.

[1 mark]

Answer _____ and _____