



# 8.8 – Graphs of Trigonometric functions

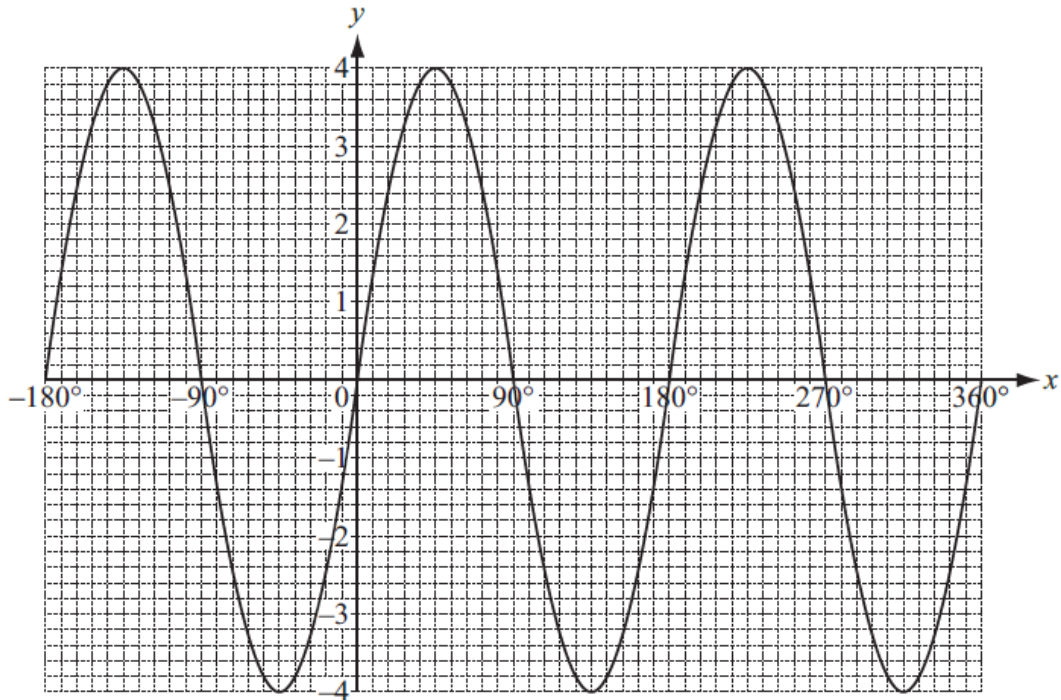
Student name: \_\_\_\_\_ Score: \_\_\_\_\_

1. For the function  $f(x) = 2\sin 3x$  write down

(a) The amplitude ..... [1]

(b) The period ..... [1]

2.



The diagram shows the graph of  $y = f(x)$ , where  $f(x) = a\sin(bx)$ .

Find the values of  $a$  and  $b$ .

$a =$  ..... [1]

$b =$  ..... [1]

3. For  $0^\circ < x < 360^\circ$  find the values of  $x$  that satisfy the equation  $\cos x = -\frac{1}{2}$ .

$x =$  ..... and  $x =$  ..... [2]

4. Describe fully the **single** transformation that maps the graph of  $y = \cos x$  onto the graph of  $y = 3\cos x$ .

..... [2]

5.  $f(x) = 6\cos(6x)$

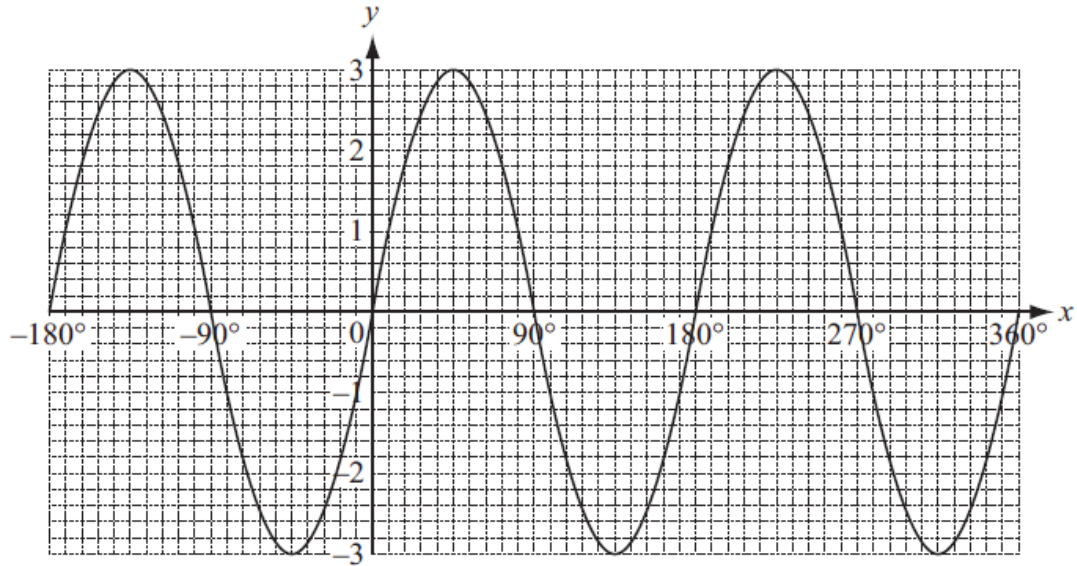
Find the amplitude and the period of  $f(x)$ .

amplitude = .....

period = ..... [2]



6.



(a) Write down the equation of the graph. .... [2]

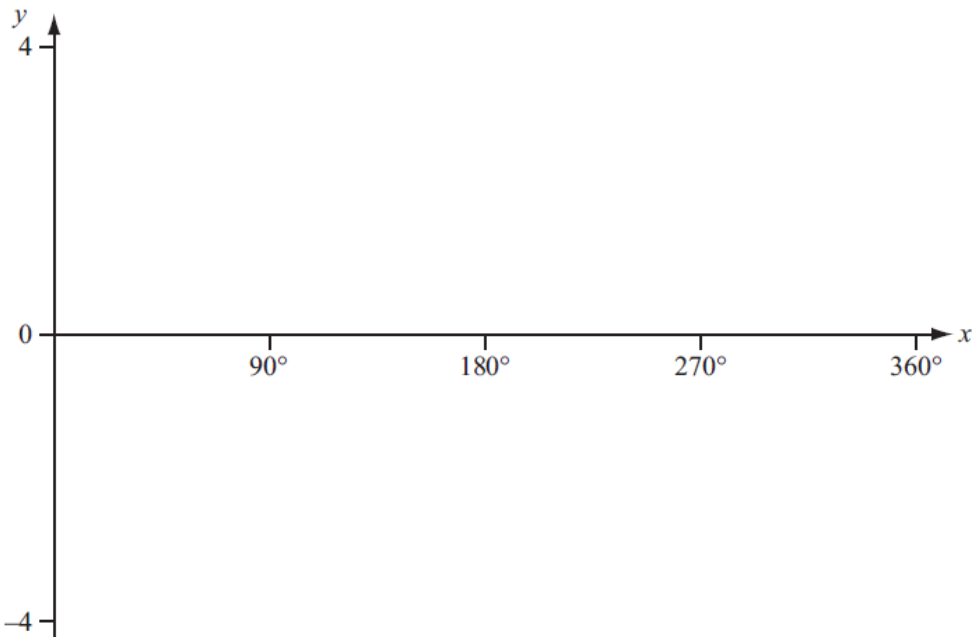
(b) On the same axes above sketch the graph of  $y = 2 \sin x$  for  $-180^\circ \leq x \leq 360^\circ$ . [2]

7. (a) For the function  $y = 3 \sin 2x$  write down

(i) the amplitude, ..... [1]

(ii) the period. .... [1]

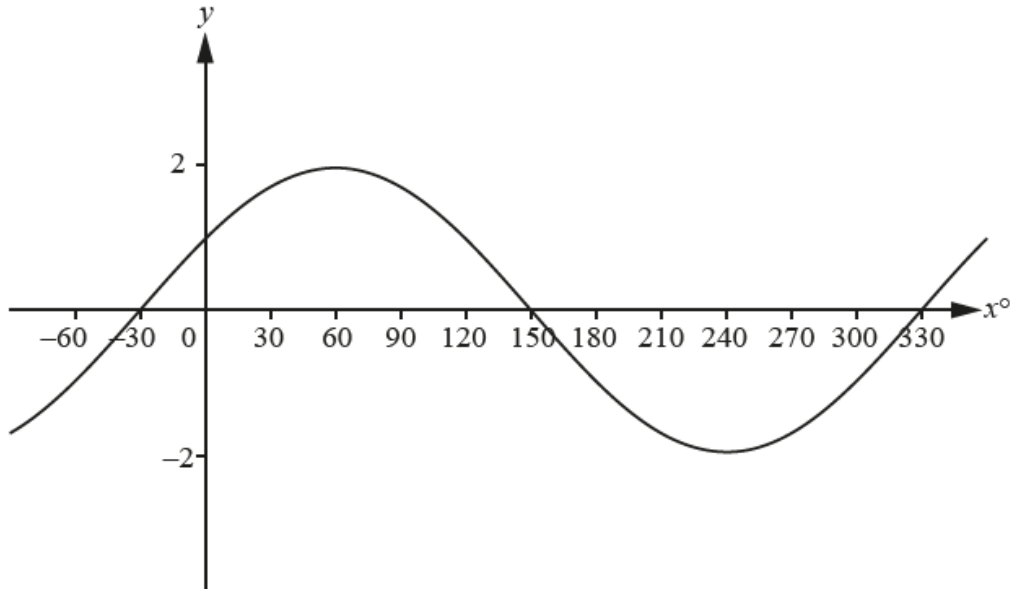
(b) Sketch the graph of  $y = 3 \sin 2x$  on the axes below for  $0^\circ \leq x \leq 360^\circ$ .



[2]



8.



The graph of  $y = a \sin(x + b)^\circ$  is shown in the diagram.  
Find the value of  $a$  and the value of  $b$ .

$a = \dots\dots\dots$

$b = \dots\dots\dots$  [1]

9. (a) Find the amplitude and period of the function  $f(x) = 4\cos(4x)$ .

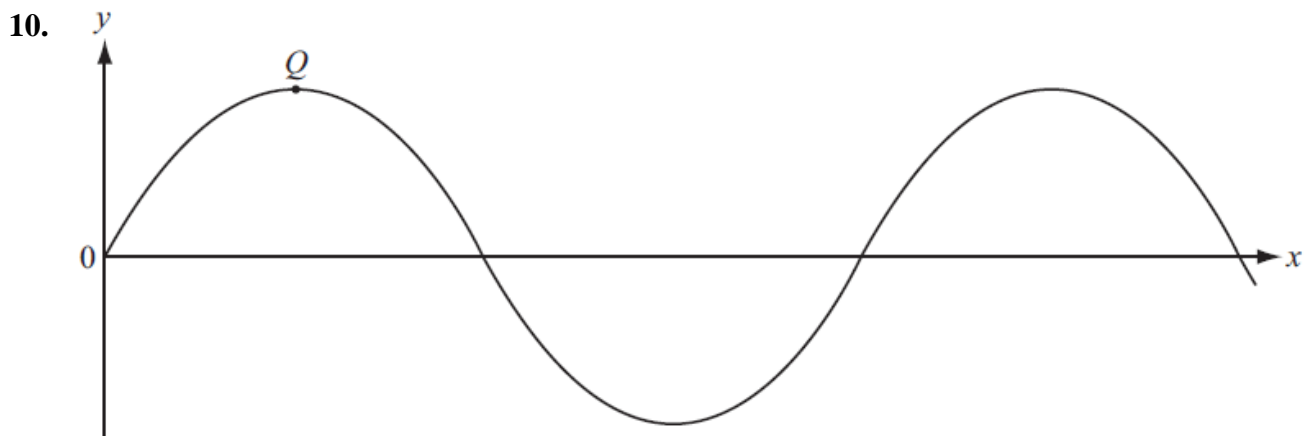
amplitude =  $\dots\dots\dots$

period =  $\dots\dots\dots$  [2]

(b)  $g(x) = 4\cos(4x) - 4$

Describe fully the **single** transformation that maps the graph of  $y = f(x)$  onto the graph of  $y = g(x)$ .

.....  
..... [2]



The diagram shows the graph of  $y = 3 \sin 2x$ .  
 $Q$  is a local maximum point.

Find the co-ordinates of  $Q$ .

( $\dots\dots\dots$ ,  $\dots\dots\dots$ ) [2]

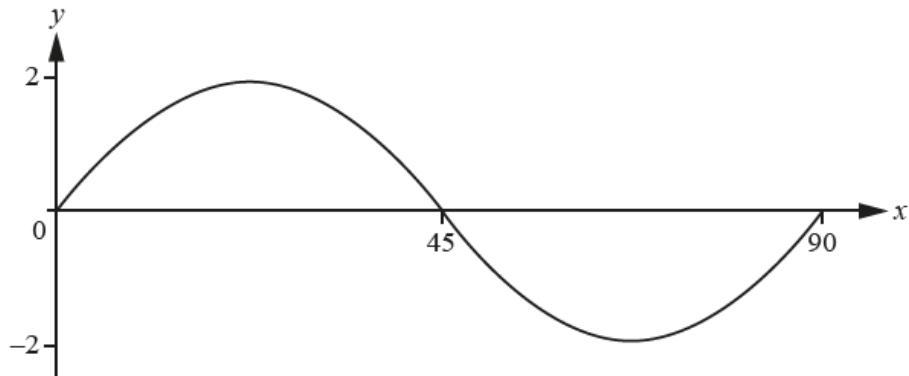
11. The graph of  $y = a\cos(bx)^\circ$  has a maximum point at  $(360, 3)$  and a minimum point at  $(450, -3)$ .

Find the value of  $a$  and the value of  $b$ .

(a) .....

(b) ..... [2]

12.



The diagram shows the graph of  $y = a \sin(bx)^\circ$ , for  $0 \leq x \leq 90$ .

Find the value of  $a$  and the value of  $b$ .

$a =$  .....

$b =$  ..... [2]

13. (a) On the grid, sketch the graph of  $y = \sin x^\circ$  for  $0 \leq x \leq 360$ .



[2]

(b) The point  $(a, 0.5)$  is on the graph of  $y = \sin x^\circ$ .

Find the two possible values of  $a$ .

$a =$  ..... or  $a =$  ..... [2]



14.  $f(x) = 3 \sin 2x^\circ$

(a) Write down the amplitude of the graph of  $f(x)$ .

..... [1]

(b) The graph of  $y = f(x)$  goes through the points  $(75, 1.5)$  and  $(a, 1.5)$ .

Find a possible value of  $a$ , greater than 75.

..... [1]

