



8.8 – Graphs of Trigonometric functions

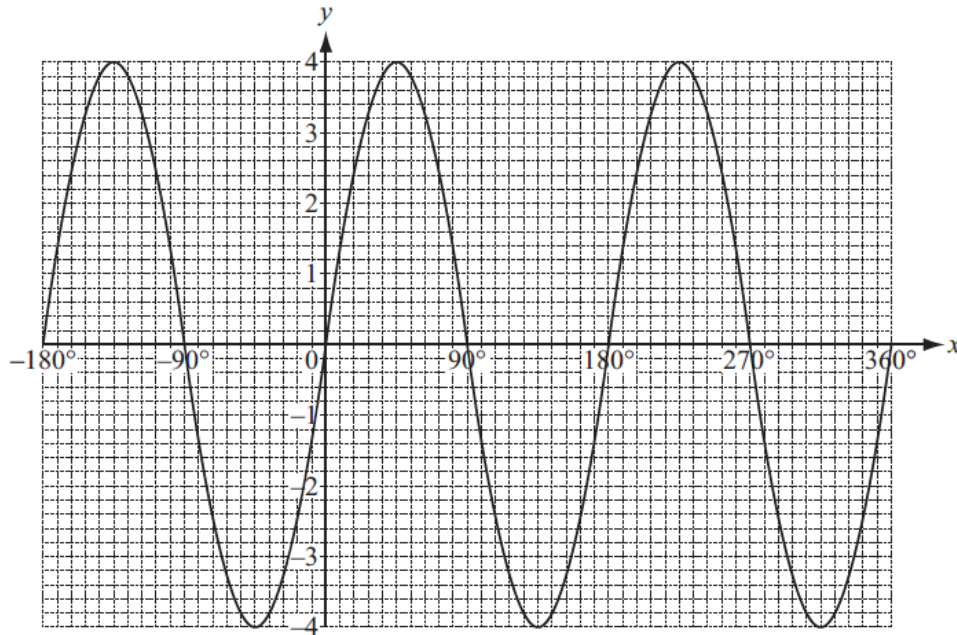
Student name: Answers Score: _____

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

(a) The amplitude **2** [1]

(b) The period **120** [1]

2.



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

Find the values of a and b .

$a =$ **4** [1]

$b =$ **2** [1]

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

$x =$ **120** and $x =$ **240** [2]

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

... **Stretch, x-axis invariant line, stretch factor 3** [2]

..... [2]

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

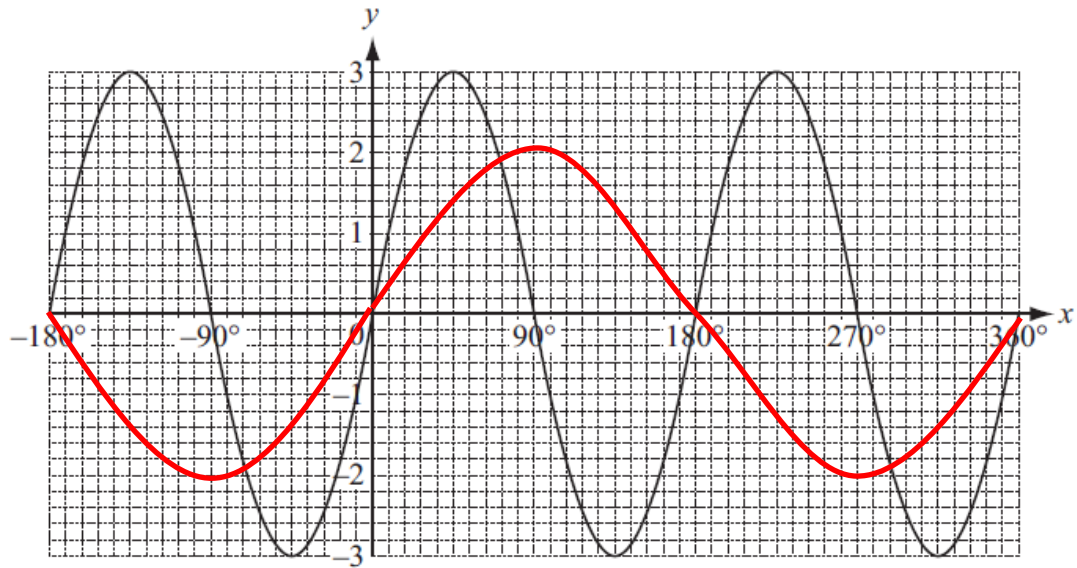
Find the amplitude and the period of $f(x)$.

amplitude = **6**

period = **60** [2]



6.



(a) Write down the equation of the graph.

$y = 3 \sin 2x$ [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

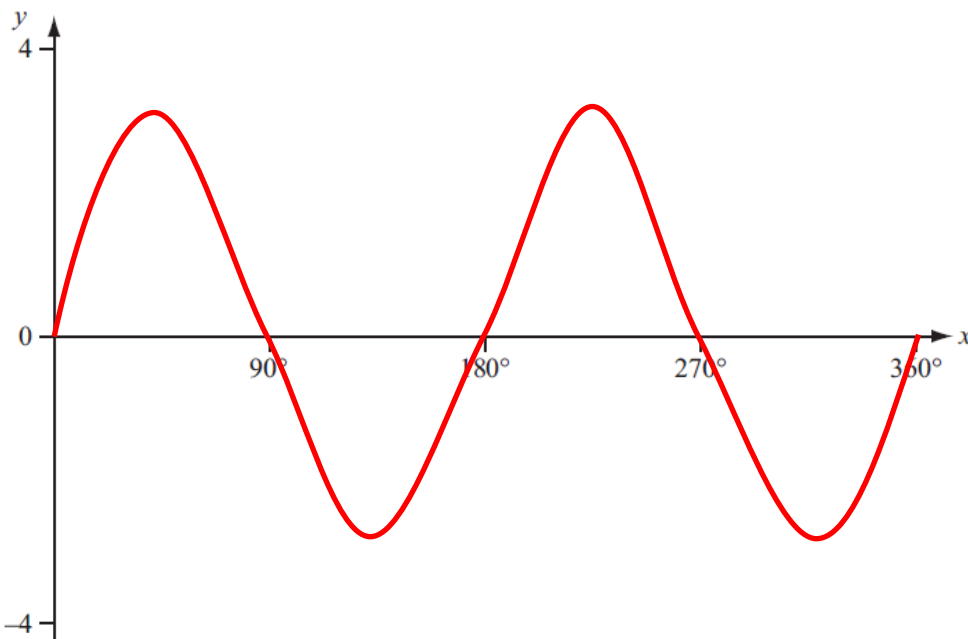
(i) the amplitude,

.....3..... [1]

(ii) the period.

.....180 or π [1]

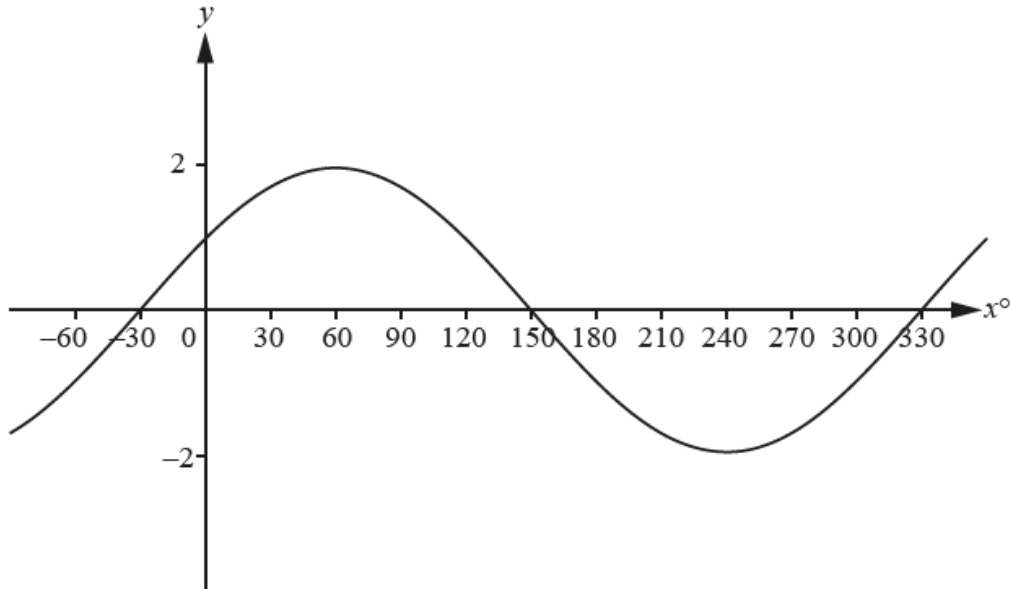
(b) Sketch the graph of $y = 3 \sin 2x$ on the axes below for $0^\circ \leq x \leq 360^\circ$.



[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 .

$a = \dots 2 \dots$
 $b = \dots 30 \dots$ [1]

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

amplitude = $\dots 4 \dots$
 period = $\dots 90 \dots$ [2]

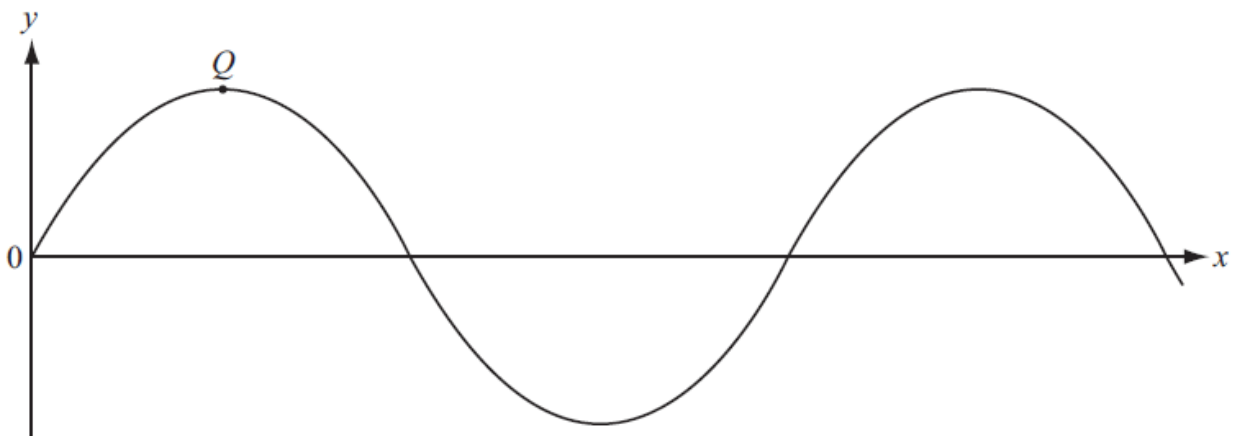
(b) $g(x) = 4\cos(4x) - 4$

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

Translation $\begin{pmatrix} 0 \\ -4 \end{pmatrix}$

..... [2]

10.



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

Find the co-ordinates of Q .

$(\dots 45 \dots, \dots 3 \dots)$ [2]

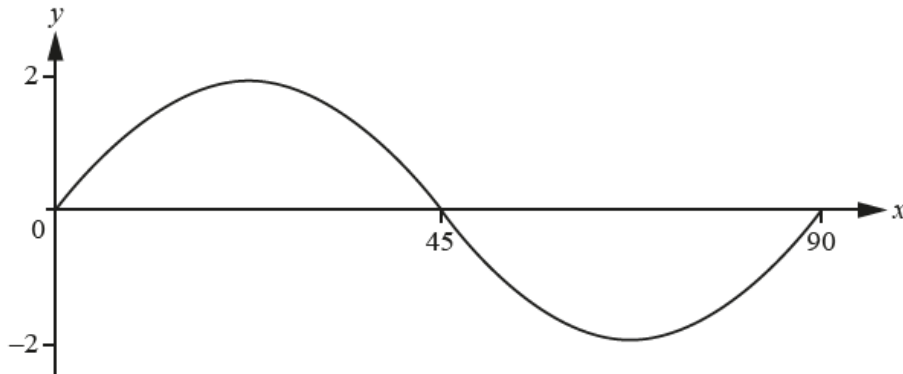


11. The graph of $y = a\cos(bx)^\circ$ has a maximum point at $(360, 3)$ and a minimum point at $(450, -3)$.

Find the value of a and the value of b .

(a)3.....
 (b)2..... [2]

12.

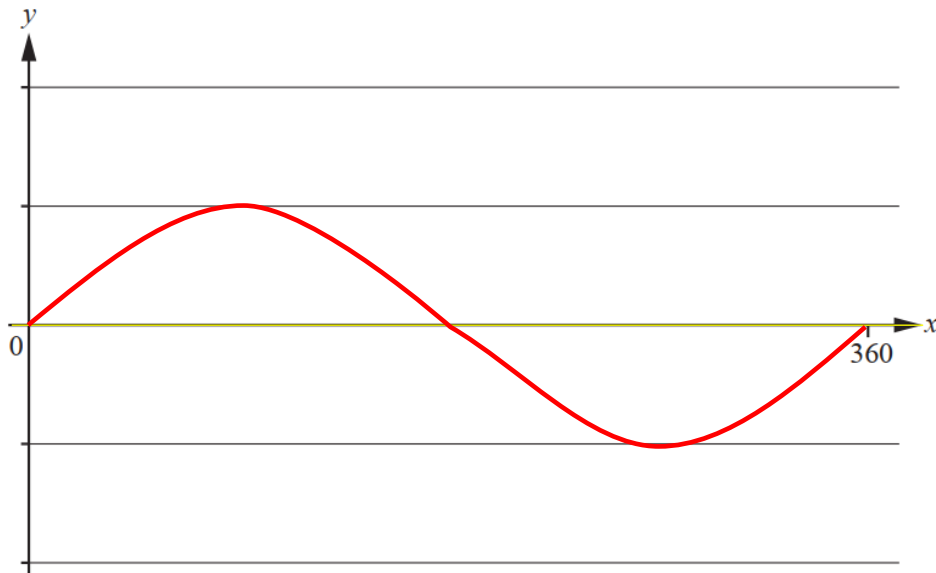


The diagram shows the graph of $y = a \sin(bx)^\circ$, for $0 \leq x \leq 90$.

Find the value of a and the value of b .

$a =$ 2.....
 $b =$ 4..... [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 .

$a =$ 30..... or $a =$ 150..... [2]



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

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

.....3..... [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.

195 or 255 or 375 or 435, etc [1]

