

HIGHER: TRANSFORMING FUNCTIONS – This is a selection of the types of question that you need to be able to solve.

**Q1.**

The graph of *y* = f(*x*) is shown on each of the grids.

(a) On this grid, sketch the graph of *y* = f(*x* – 3)



**(2)**

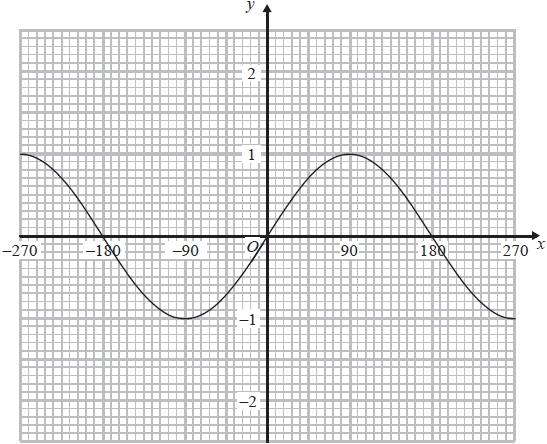
(b) On this grid, sketch the graph of *y* = f(*x*) + 2



**(2)**

**(Total for Question is 4 marks)**

**Q2.**



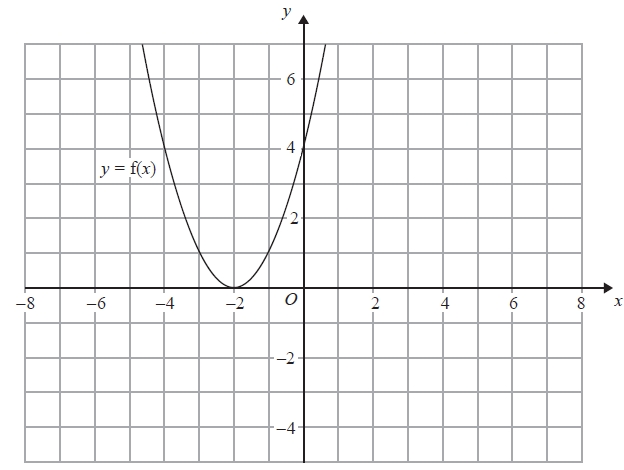
The graph of *y* = sin *x*° for values of *x* from –270 to +270 is shown above.

On the same axes, draw the graph of *y* = 1 – sin *x*° for values of *x* from –270 to +270

**(Total for question = 2 marks)**

**Q3.**

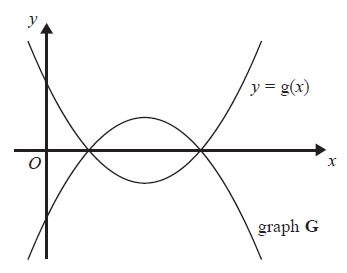
The graph of *y* = f(*x*) is shown on the grid.



(a)  On the grid above, sketch the graph of *y* = f(*x* + 3)

**(2)**

The graph of *y* = g(*x*) is shown below.



The graph **G** is the reflection of *y* = g(*x*) in the *x*-axis.

(b)  Write down an equation of graph **G**.

...........................................................

**(1)**

**(Total for question = 3 marks)**

**Q4.**

The graph of *y* = f(*x*) is shown on both grids below.



(a)  On the grid above, sketch the graph of *y* = f(−x)

**(1)**



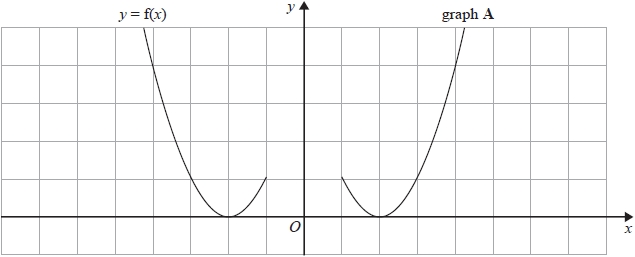
(b) On this grid, sketch the graph of *y* = −f(*x*) + 3

**(1)**

**(Total for question = 2 marks)**

**Q5.**

The graph of    *y* = f(*x*)    is shown on the grid.



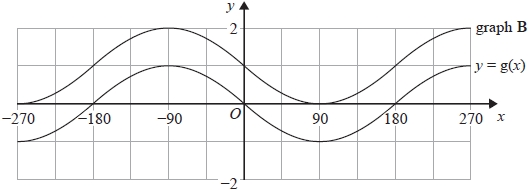
Graph **A** is a reflection of the graph of    *y* = f(*x*).

(a)  Write down the equation of graph **A**.

...........................................................

**(1)**

The graph of    *y* = g(*x*)    is shown on the grid.



Graph **B** is a translation of    *y* = g(*x*).

(b)  Write down the equation of graph **B**.

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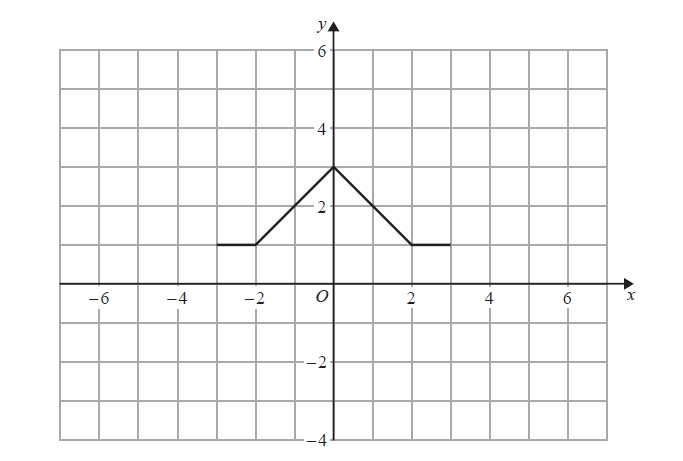
**(1)**

**(Total for question = 2 marks)**

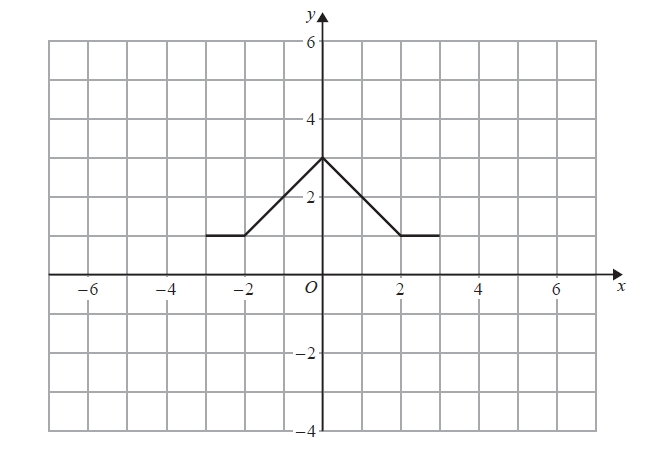
**Q6.**

(a)  The graph of *y* = f(*x*) is shown on both grids below.

(i)  On this grid, draw the graph of *y* = -f(*x*)



(ii)  On the grid below, draw the graph of *y* = f(*x* – 3)



**(2)**

**(Total for question = 4 marks)**

**Q7.**

*y* = f(*x*)

The graph of *y* = f(*x*) is shown on the grid.



(a) On the grid above, sketch the graph of *y* = – f(*x*).

**(2)**

The graph of *y* = f(*x*) is shown on the grid.



The graph **G** is a translation of the graph of *y* = f(*x*).

(b) Write down the equation of graph **G**.

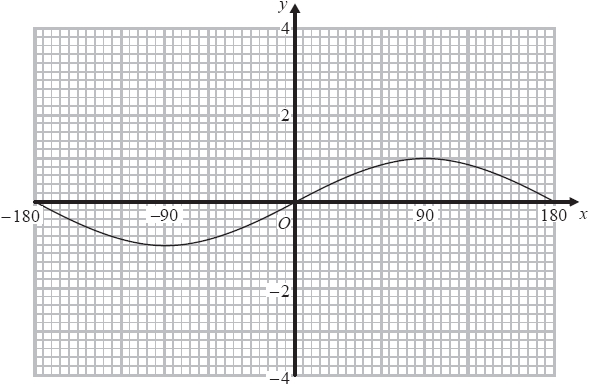
      ..............................................................................................................................................

**(2)**

**(Total for Question is 3 marks)**

**Q8.**

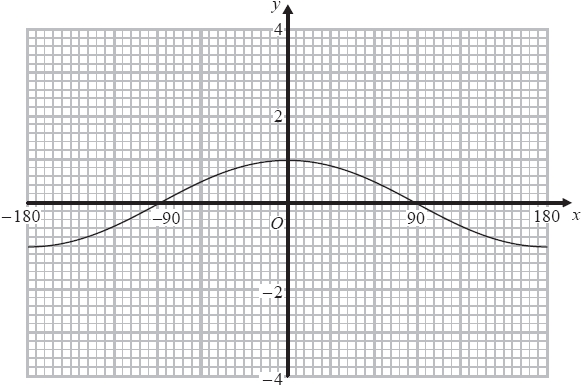
Here is the graph of *y* = sin *x*° for –180 ≤ *x* ≤ 180



(a)  On the grid above, sketch the graph of *y* = sin *x*° + 2 for –180 ≤ *x* ≤ 180

**(2)**

Here is the graph of *y* = cos *x*° for –180 ≤ *x* ≤ 180



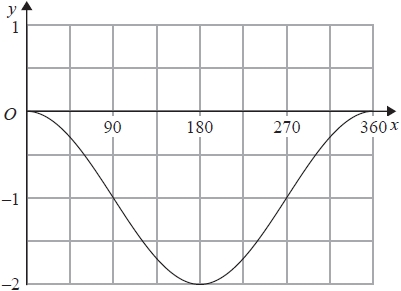
(b)  On the grid above, sketch the graph of *y* = cos (*x* + 90) for –180 ≤ *x* ≤ 180

**(2)**

**(Total for question = 4 marks)**

**Q9.**

Here is a sketch of the curve   *y* = sin (*x* + *a*)° + *b*



Given that 0 < *a* < 360   
find the value of *a* and the value of *b*.

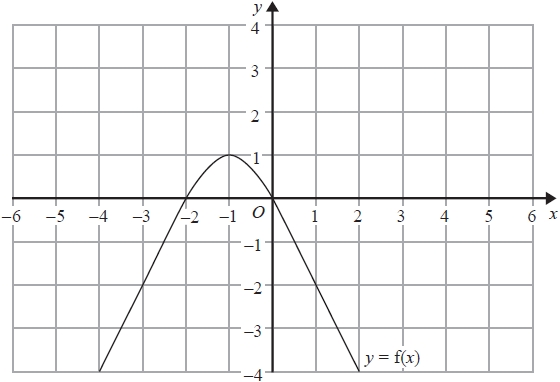
*a* = ...........................................................

*b* = ...........................................................

**(Total for question = 2 marks)**

**Q10.**

The graph of *y* = f(*x*) is shown on the grid.



(a)  On the grid, sketch the graph of *y* = f(*x* − 1)

**(1)**

The graph of *y* = f(*x*) has a turning point at the point ( −1, 1)

(b)  Write down the coordinates of the turning point of the graph of *y* = f(–*x*) + 2

( ................ , ................ )

**(1)**

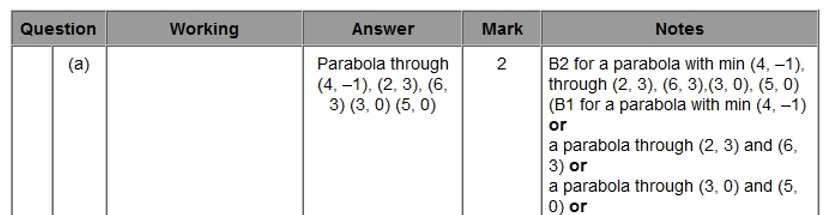
**(Total for question = 2 marks)**

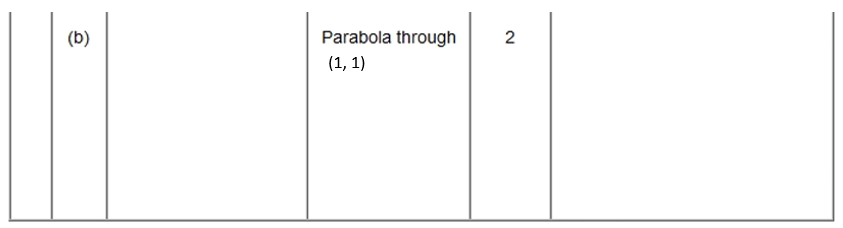
**Q11.** The graph of *y* = f(*x*) is transformed to give the graph of *y* = −f(*x* + 3)   
The point *A* on the graph of *y* = f(*x*) is mapped to the point *P* on the graph of *y* = −f(*x* + 3)

The coordinates of point *A* are (9, 1)   
Find the coordinates of point *P*.

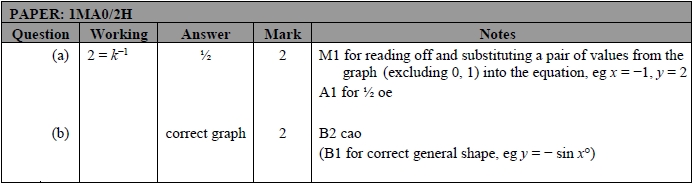
(............................ , ............................)

**(Total for question is 2 marks)**

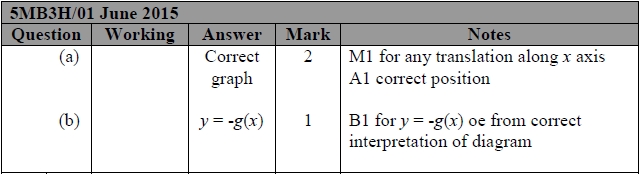
**Mark Scheme**  
Q1.  




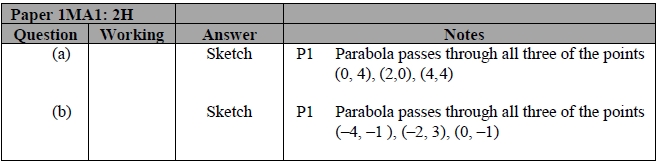
**Q2.**



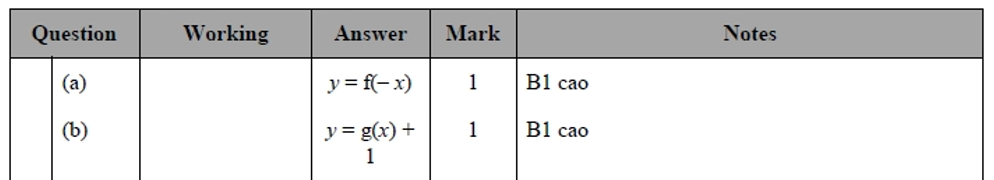
**Q3.**



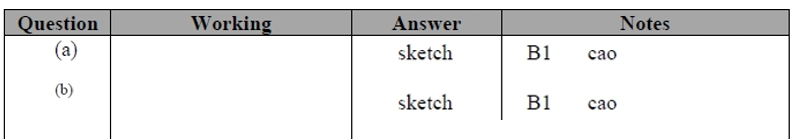
**Q4.**



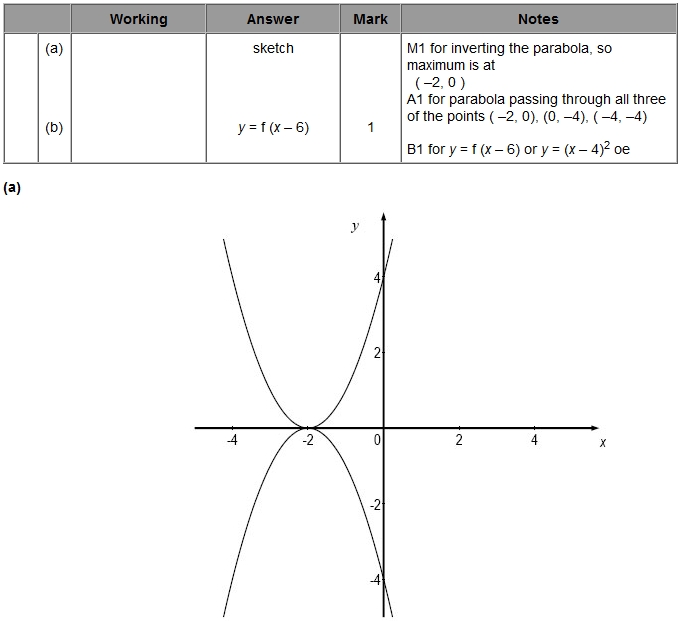
**Q5.**



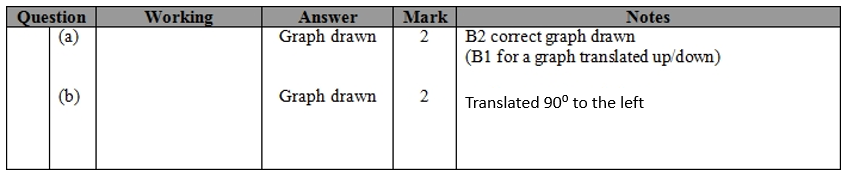
**Q6.**



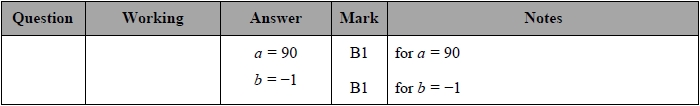
**Q7.**



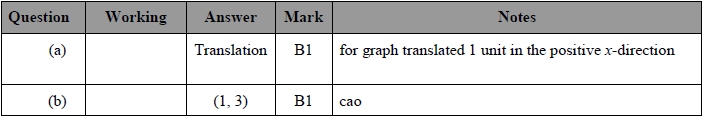
**Q8.**



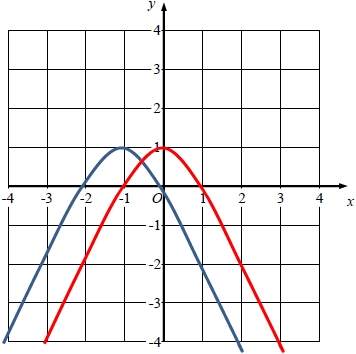
**Q9.**



**Q10.**



**(a)**



**Q11.**

