Surname	
Other Names	
Candidate's Signature	

GCSE 9 - 1 Questions

Transforming Graphs 1

Calculator Allowed

INSTRUCTIONS TO CANDIDATES

Write your name in the space provided.

Write your answers in the spaces provided in this question paper.

Answer ALL questions.

Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.

You should have a ruler, compass and protractor where required.

Total Marks :

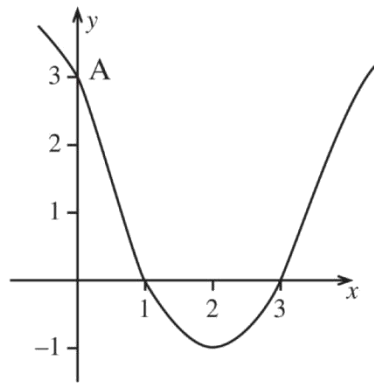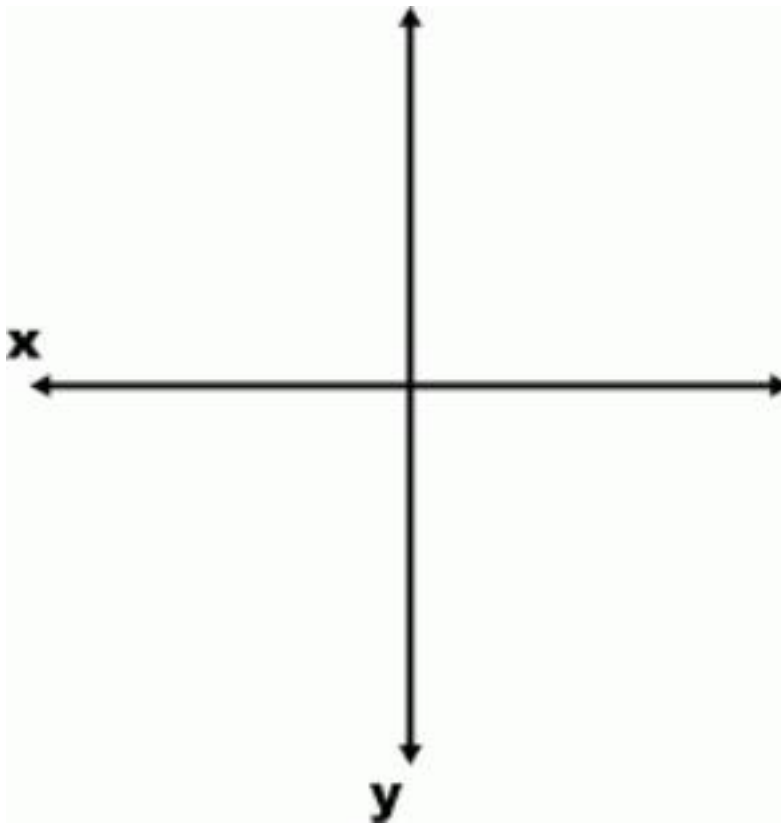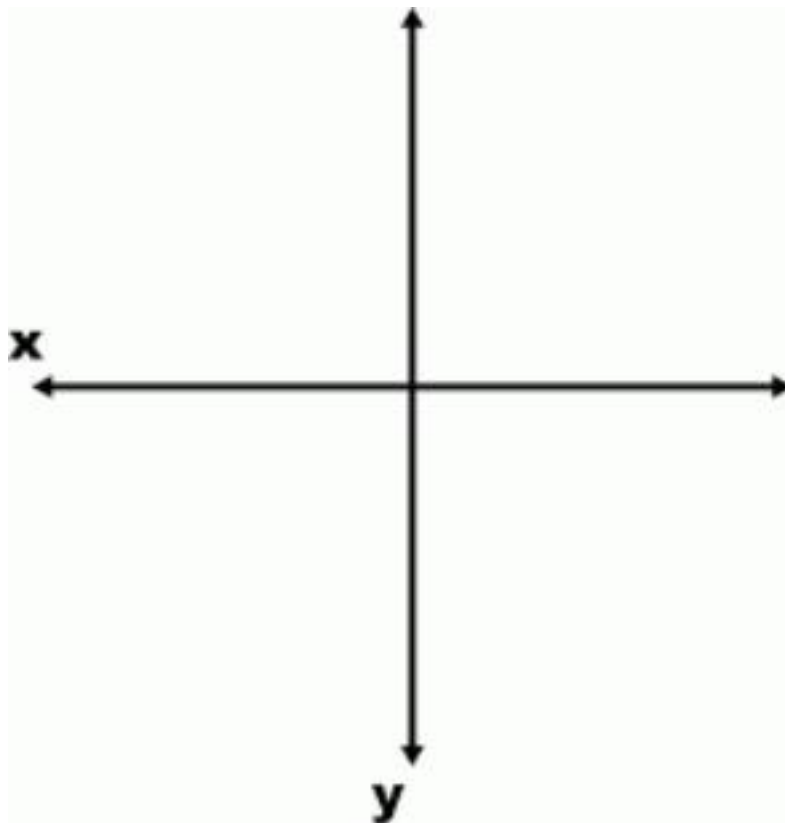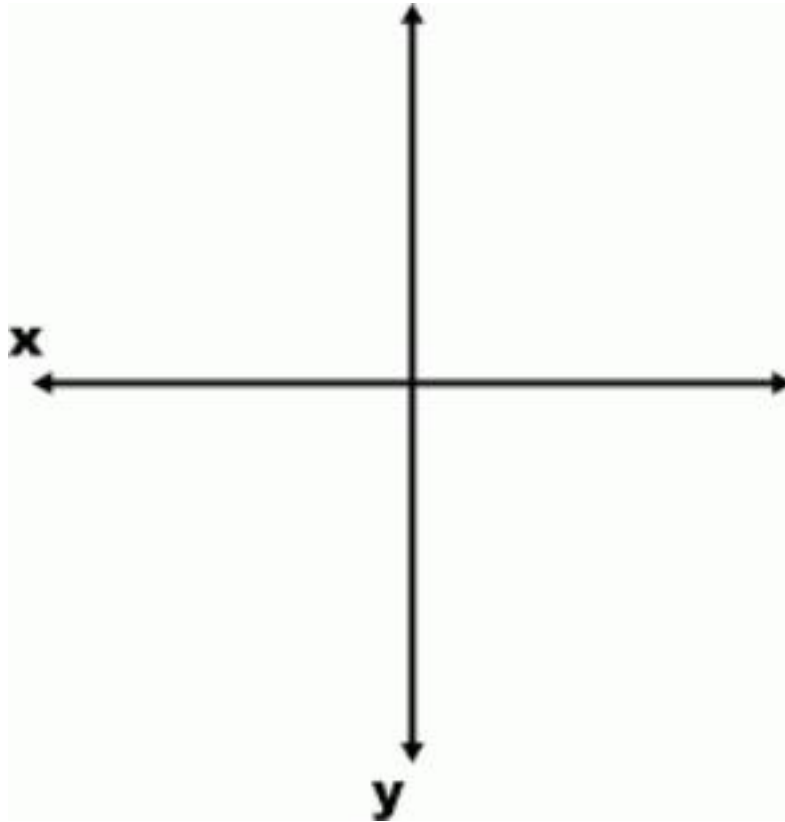1) The graph of the function $y = f(x)$ is sketched in **Fig. 1** below.

Fig. 1

On separate diagrams draw sketches of the following functions, clearly marking the image of the point A:

(i) $y = f(x) - 2$ [2]

(ii) $y = f(-x)$ [2]

(iii) $y = 3f(x)$ [2]

x

y

x

y

2) The diagram in **Fig. 1** below, shows the graph of the curve $y = f(x)$.
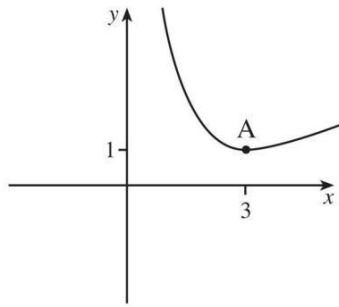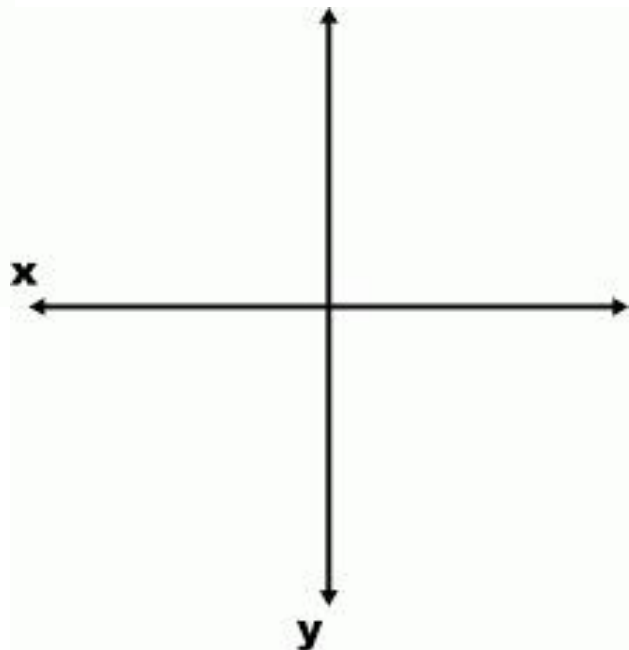The point A $(3,1)$ lies on the curve.

Fig. 1

Sketch, on separate diagrams, the graphs of:

(i) $y = f(-x)$ [2]

(ii) $y = f(x) - 1$ [2]

clearly labelling the images of the point A.
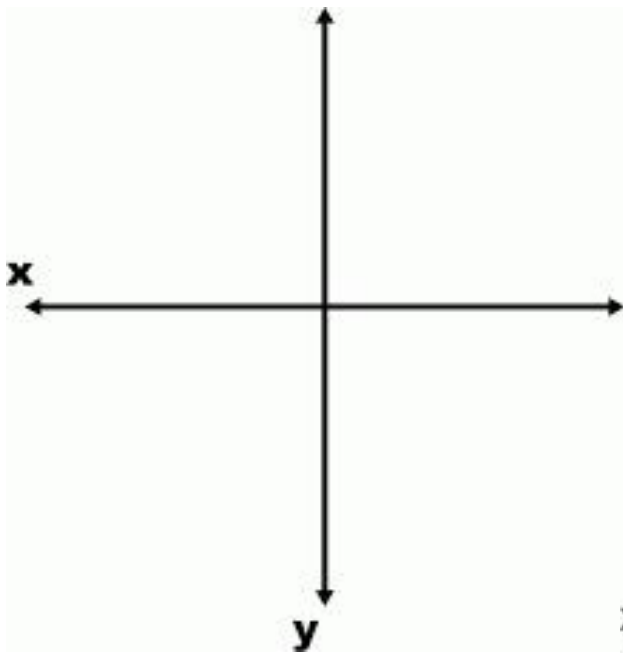
3) **Fig. 1** below shows a sketch of the graph of the function $y = f(x)$
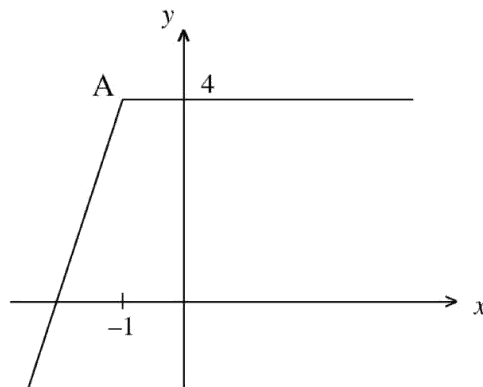
Fig. 1

Point A has coordinates $(-1, 4)$

Sketch, on separate diagrams, the graphs of:

(i) $y = f(x - 4)$ [2]

(ii) $y = 3f(x)$ [2]

clearly identifying the image of the point A.
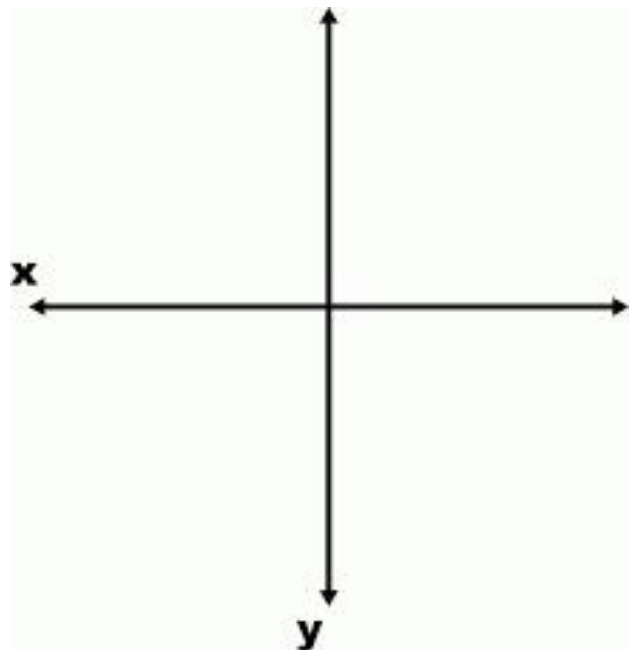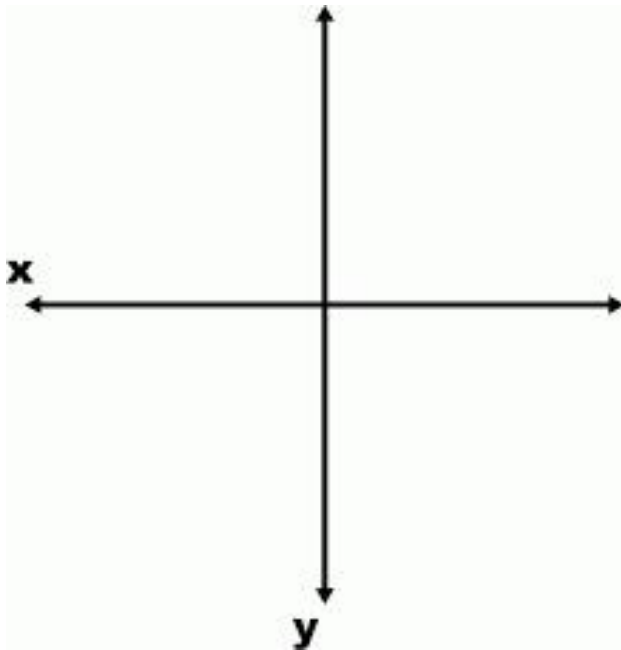
4) The graph of the function $y = f(x)$ is sketched in **Fig. 1** below.
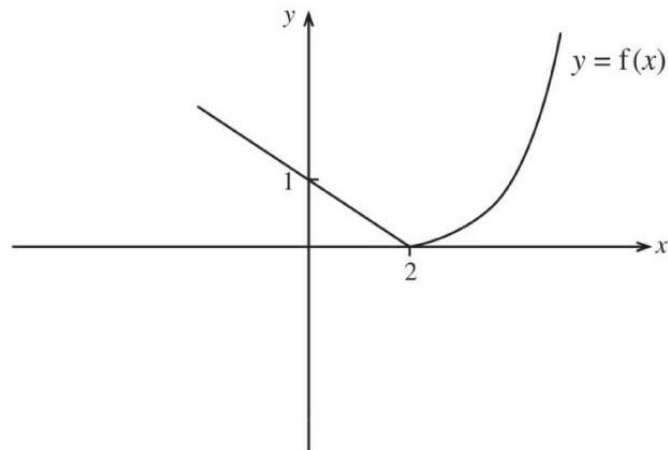
Fig. 1

On separate diagrams draw sketches of the graphs of:

(i) $y = f(x) + 3$; [2]

(ii) $y = 2f(x)$; [2]

clearly labelling any relevant points on the axes.
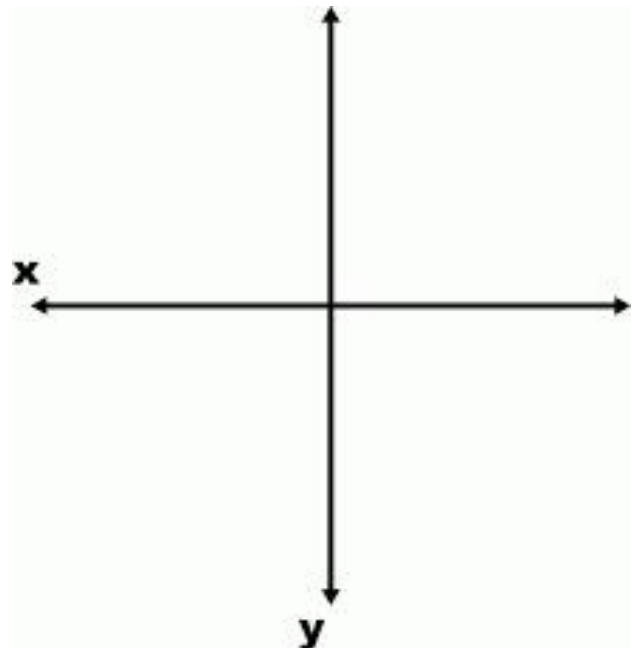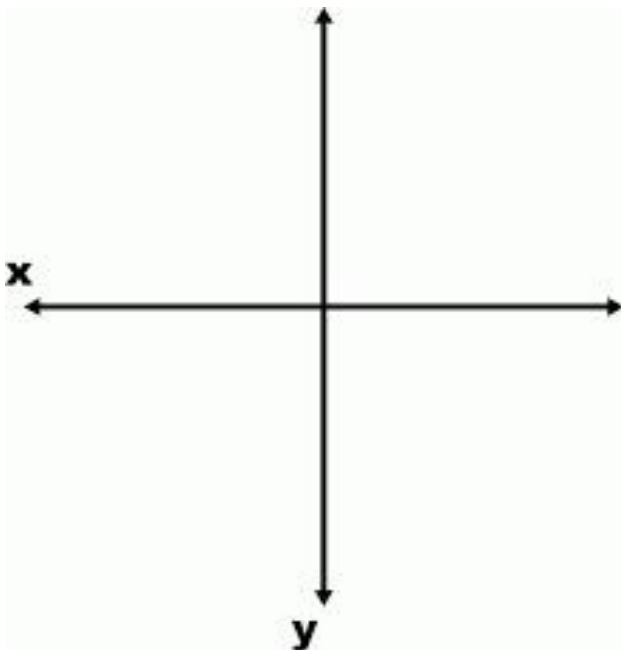
5) *(a)* The graph shows a sketch of the curve with equation $y = f(x)$.
The lowest point of the curve is labelled A and has coordinates $(-3, 1)$.
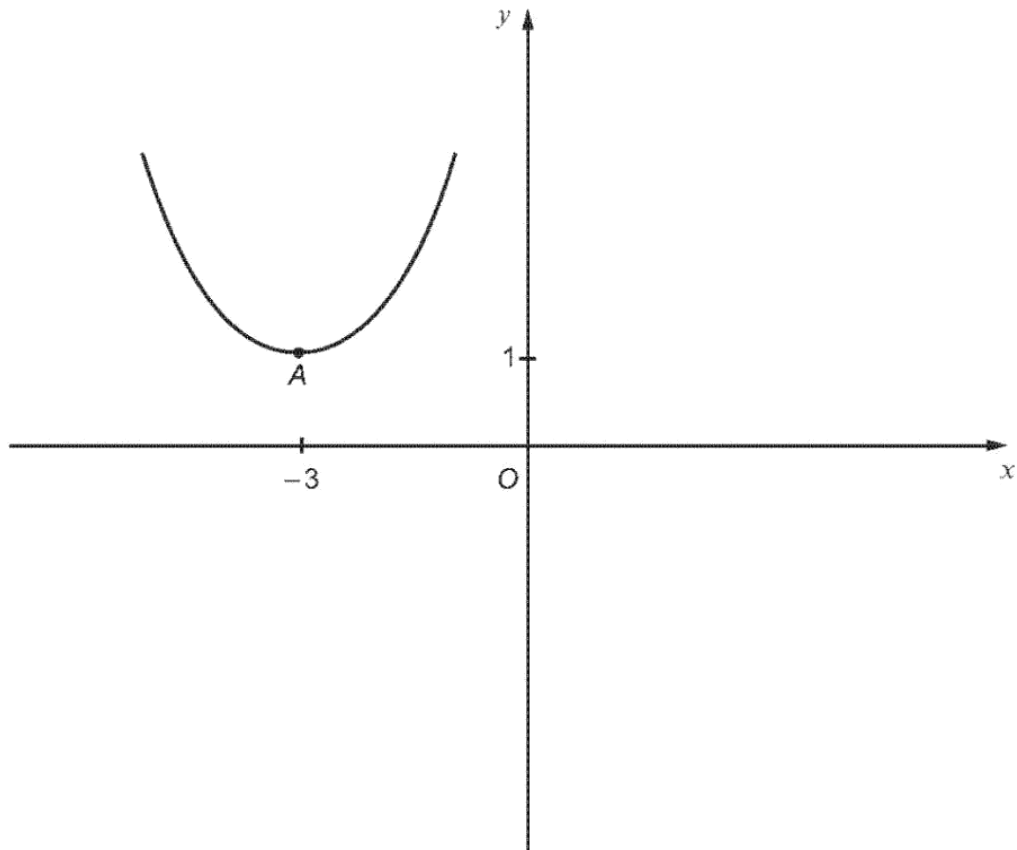
On the same axes, sketch the graph of the curve with equation $y = -f(x)$.
Indicate clearly the coordinates of one point on this curve. [2]

(b)   This graph again shows a sketch of the curve with equation $y = f(x)$.
The lowest point of the curve is labelled A and has coordinates $(-3, 1)$.
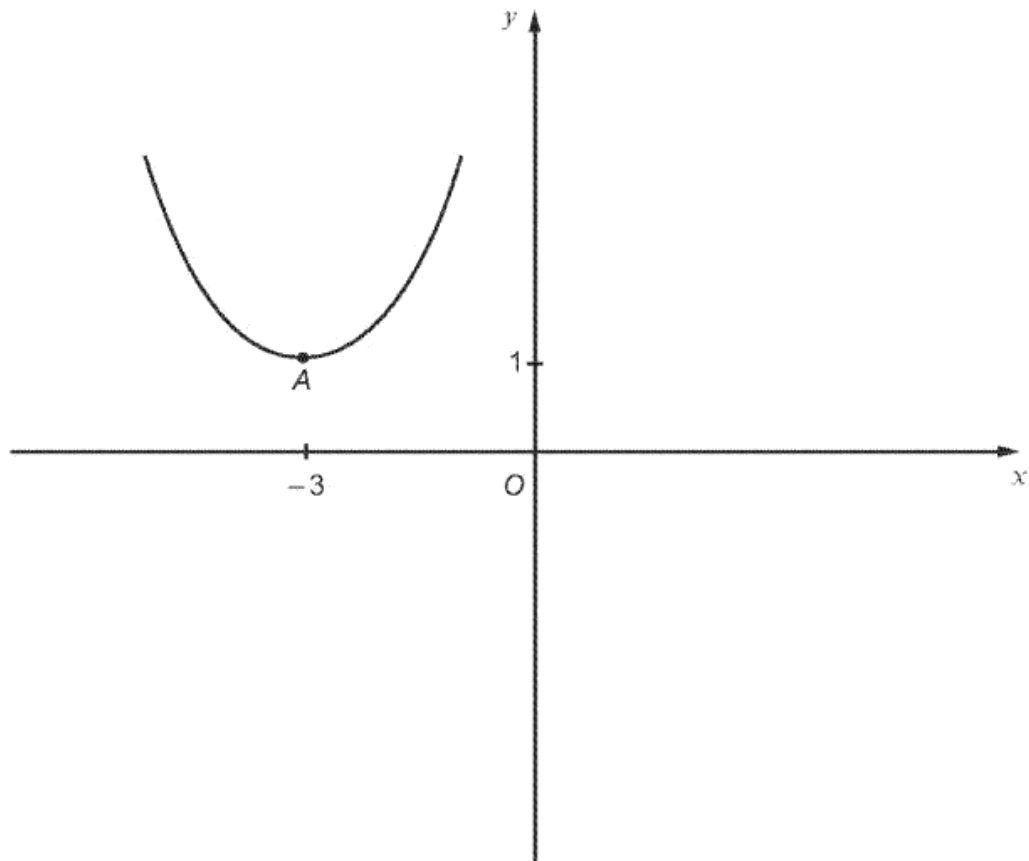
On the same axes, sketch the graph of the curve with equation $y = f(x - 5)$.
Indicate clearly the coordinates of one point on this curve.   [2]

6) The diagram shows a sketch of $y = f(x)$.
On the same diagram, sketch the curve $y = -f(x)$.
Show clearly where this curve crosses the axes. [2]
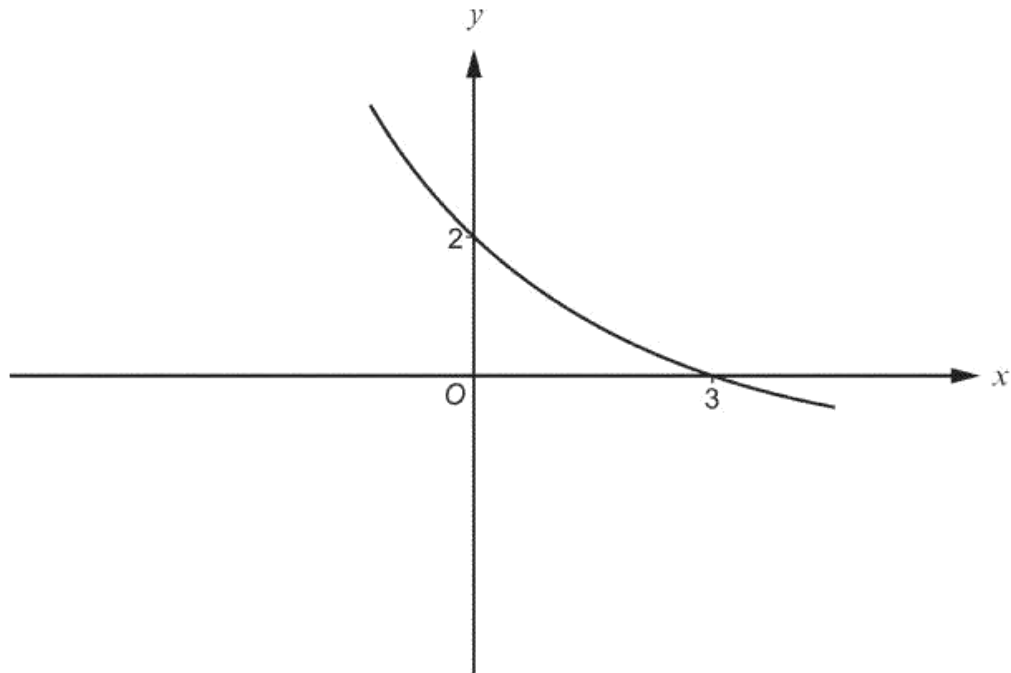
7) The graph below shows a sketch of the curve $y = f(x)$.
On the same diagram, sketch the curve $y = f(x + 4)$.
You must show clearly where the curve crosses the x-axis. [2]
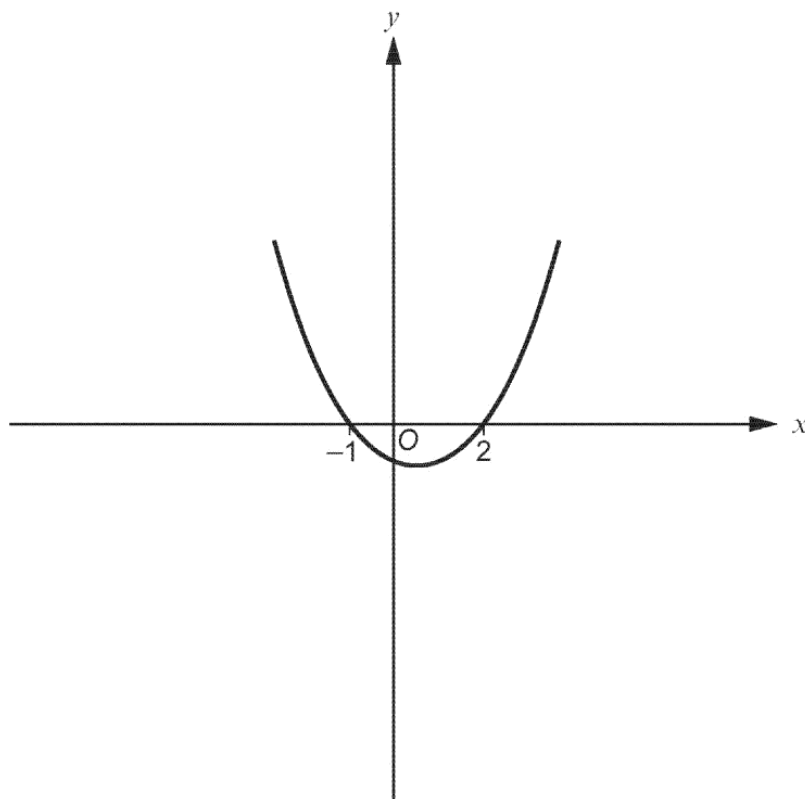
8) *(a)* The diagram shows a sketch of $y = f(x)$.
On the same diagram, sketch the curve $y = f(x - 4)$.
Mark clearly the coordinates of the point where this curve touches an axis. [2]
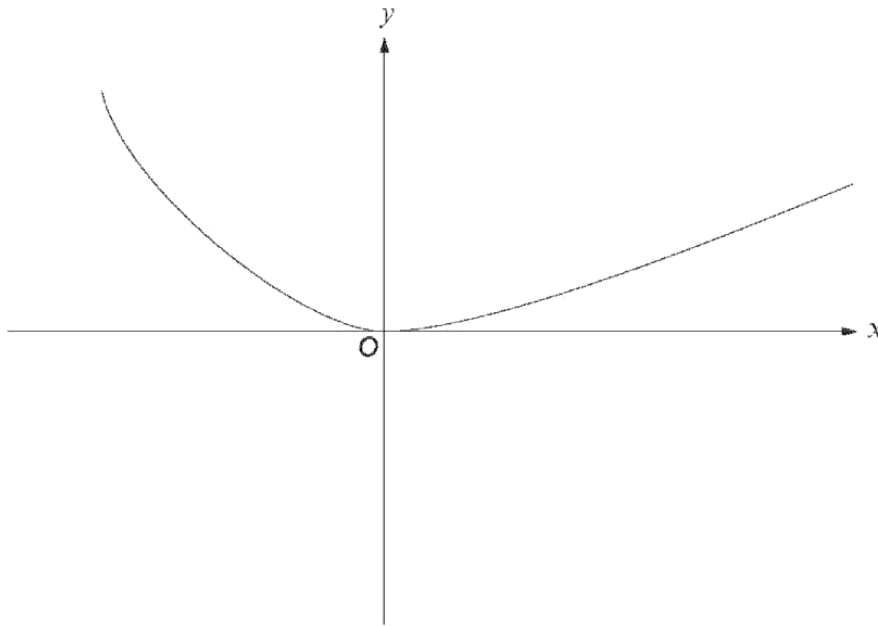
(b) The diagram shows a sketch of $y = f(x)$.
On the same diagram, sketch the curve $y = -f(x) + 2$.
Mark clearly the coordinates of the point where this curve meets the y-axis. [3]

9) *(a)* The diagram shows a sketch of $y = x^2$.
On the same diagram, sketch the curve $y = x^2 + 3$.
Mark clearly the coordinates of one point where the curve meets or crosses an axis.

[2]

(b) The diagram shows a sketch of $y = x^2$.
On the same diagram, sketch the curve $y = (x + 3)^2$.
Mark clearly the coordinates of one point where the curve meets or crosses an axis.
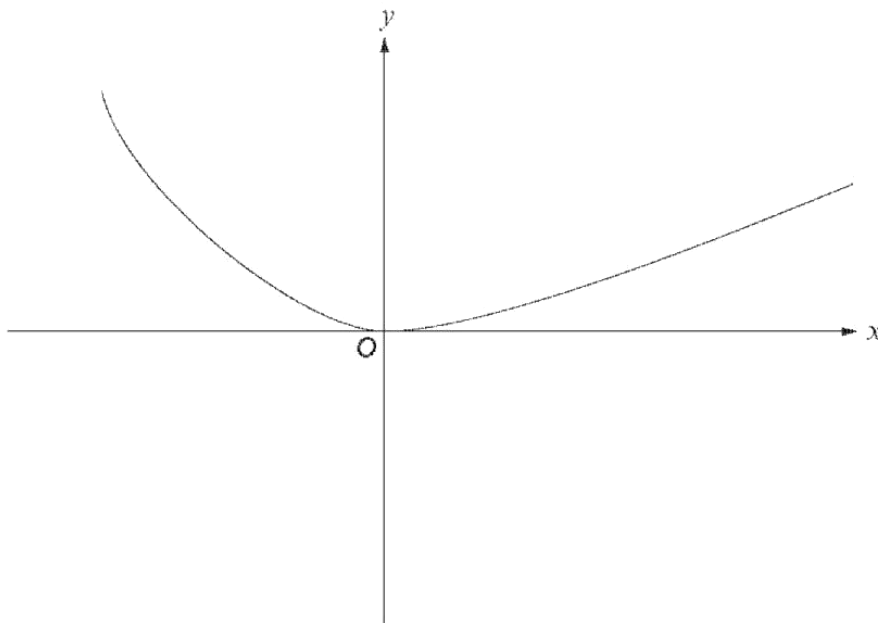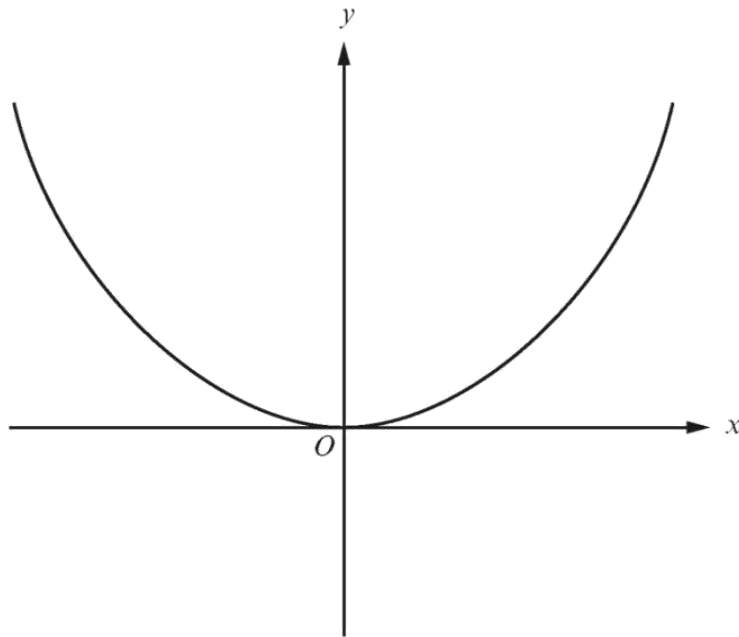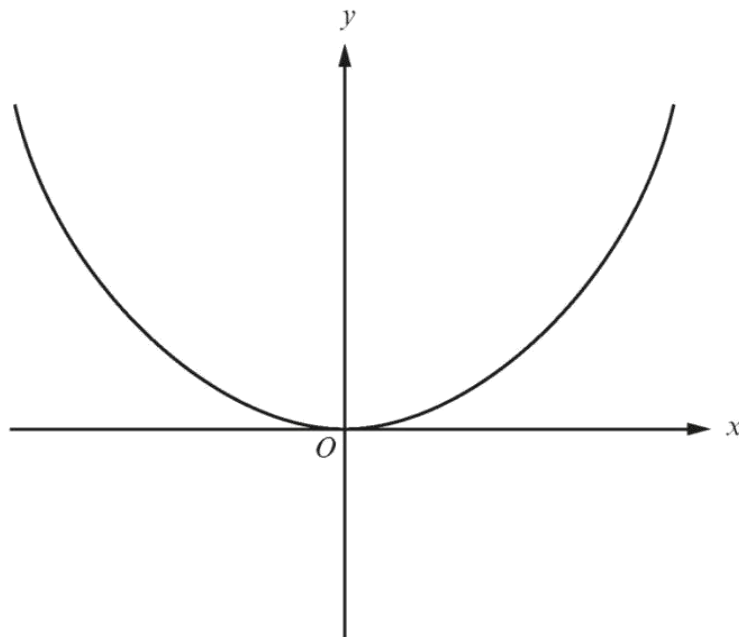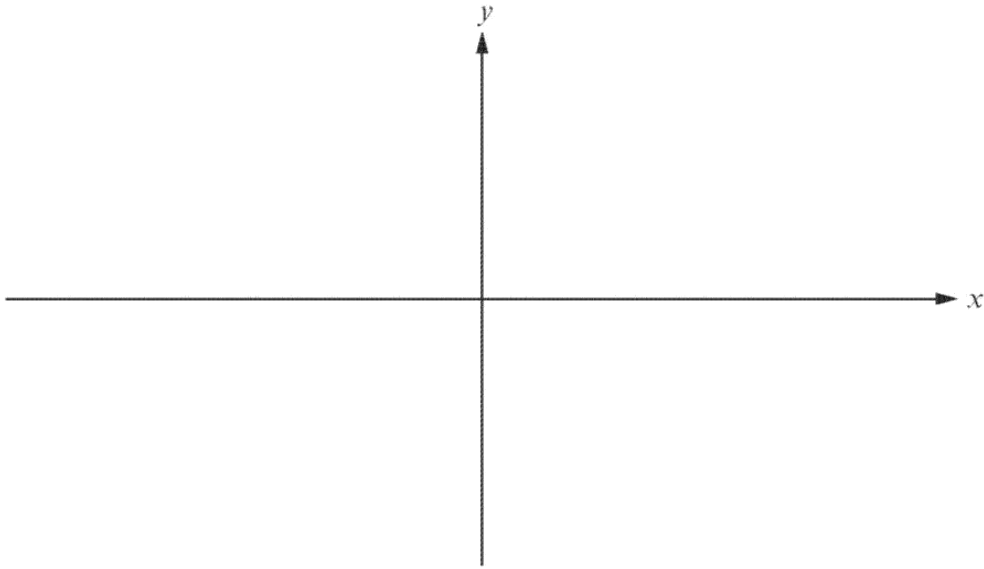

[2]
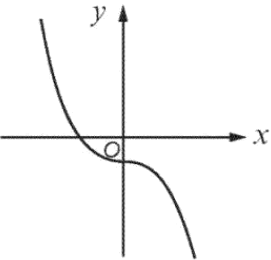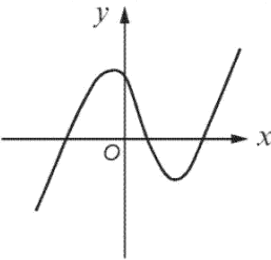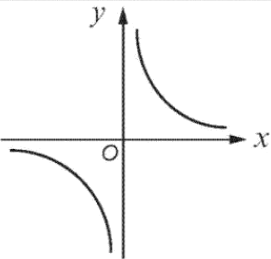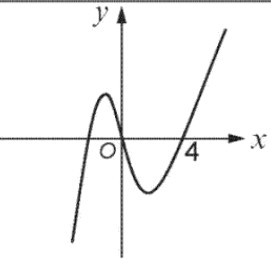
10) *(a)* Use the axes below to sketch $y = x^2 - 9$.
Mark clearly the coordinates of any point where this curve meets an axis.   [3]

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(b) Mari is asked to sketch $y = (x + 2)^2 - 9$.
Describe how Mari could use your sketch from *(a)* to sketch this curve.   [2]

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11) Circle either TRUE or FALSE for each statement given below. [2]

GRAPH	STATEMENT		
	The equation of this graph could be $y = -x^3 - 2$.	TRUE	FALSE
	The equation of this graph could be $y = x^3 - 9x$.	TRUE	FALSE
	The equation of this graph could be $y = x^{-1}$.	TRUE	FALSE
	The equation of this graph could be $y = x^3 + 4$.	TRUE	FALSE

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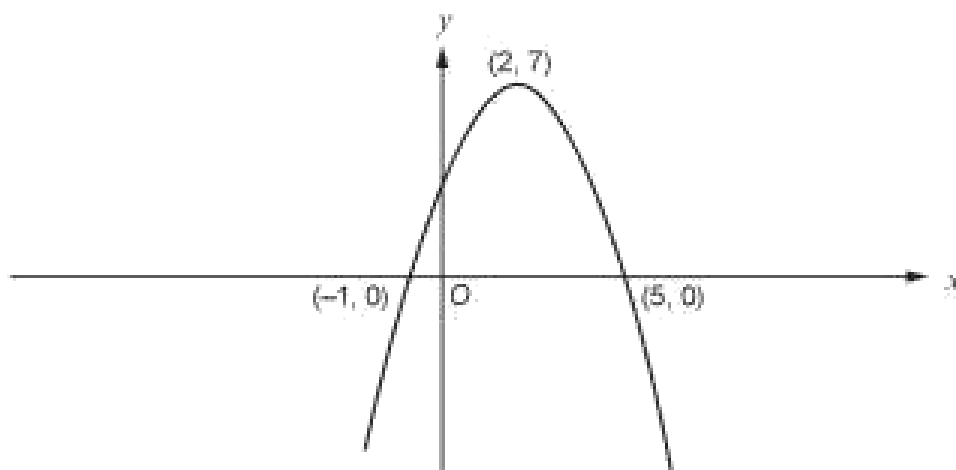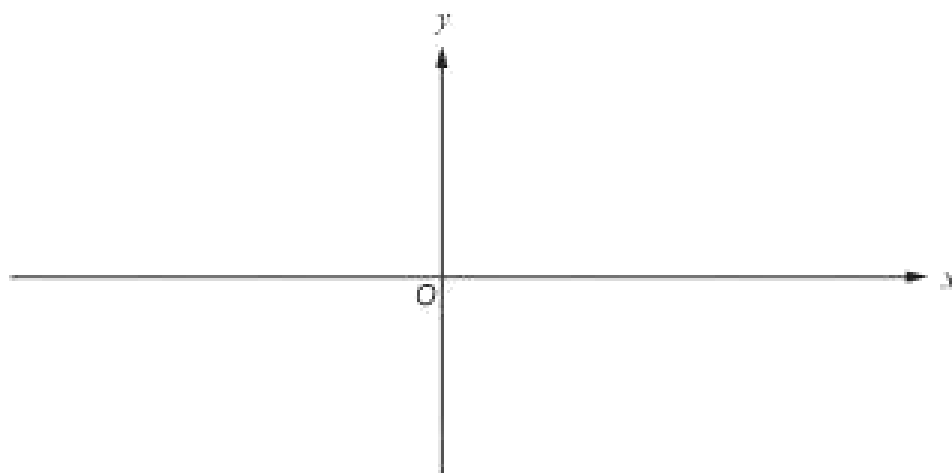
12) (a)   The diagram shows a sketch of the graph $y = f(x)$.
          The graph passes through the points (−1, 0) and (5, 0) and its highest point is at (2, 7).

Sketch the graph of $y = f(x − 3)$ on the axes below.
You must indicate
   •   the coordinates of the points of intersection of the graph with the x-axis
   •   the coordinates of the highest or lowest point.   [3]

(b) Using the axes below, **sketch** the graph of $y = \cos x + 1$ for values of x from 0° to 360°.

[2]