

Write your name here

Surname

Other names

In the style of:
Pearson Edexcel

Level 1/Level 2 GCSE (9 - 1)

Centre Number

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Candidate Number

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Mathematics

Transformation of Curves

Higher Tier

GCSE style questions arranged by topic

Paper Reference

1MA1/1H

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- **Calculators may not be used.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**



Information

- The total mark for this paper is
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

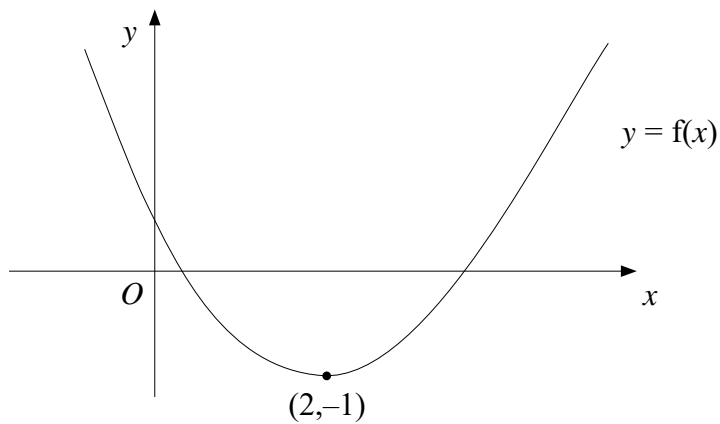
Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►



1



The diagram shows part of the curve with equation $y = f(x)$

The minimum point of the curve is at $(2, -1)$

(a) Write down the coordinates of the minimum point of the curve with equation

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

.....

(ii) $y = 2f(x)$

.....

(iii) $y = f(2x)$

.....

(3)

The curve $y = f(x)$ is reflected in the y axis.

(b) Find the equation of the curve following this transformation.

$y =$

(1)

The curve with equation $y = f(x)$ has been transformed to give the curve with equation

$y = f(x) + 2$

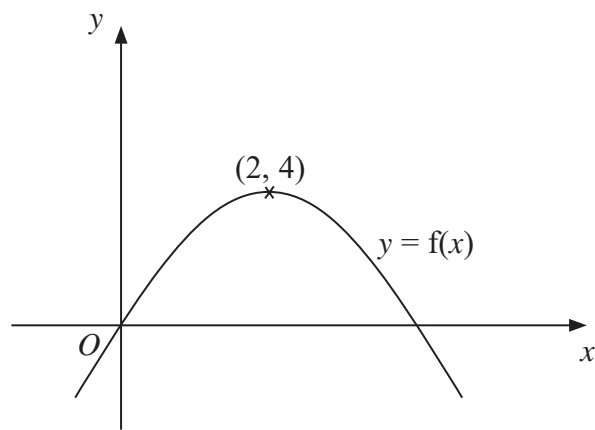
(c) Describe the transformation.

.....

(1)

(Total for Question 1 is 5 marks)

2



The diagram shows part of the curve with equation $y = f(x)$.

The coordinates of the maximum point of this curve are $(2, 4)$.

Write down the coordinates of the maximum point of the curve with equation

(a) $y = f(x - 2)$

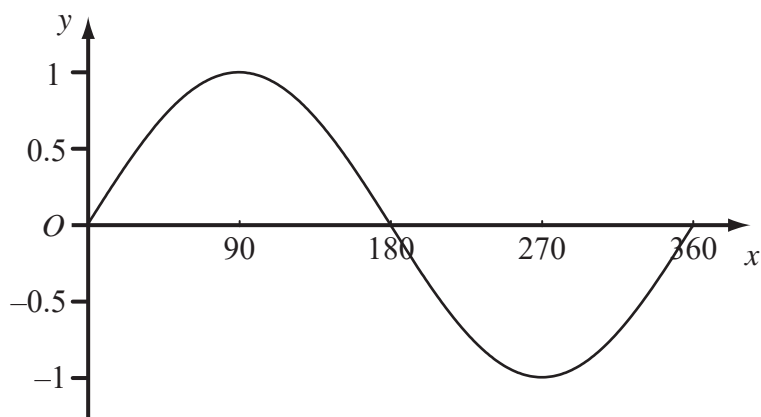
(..... ,)
(1)

(b) $y = 2f(x)$

(..... ,)
(1)

(Total for Question 2 is 2 marks)

- 3 The diagram shows a sketch of the curve $y = \sin x^\circ$ for $0 \leq x \leq 360$



The exact value of $\sin 60^\circ = \frac{\sqrt{3}}{2}$

- (a) Write down the exact value of

(i) $\sin 120^\circ$,

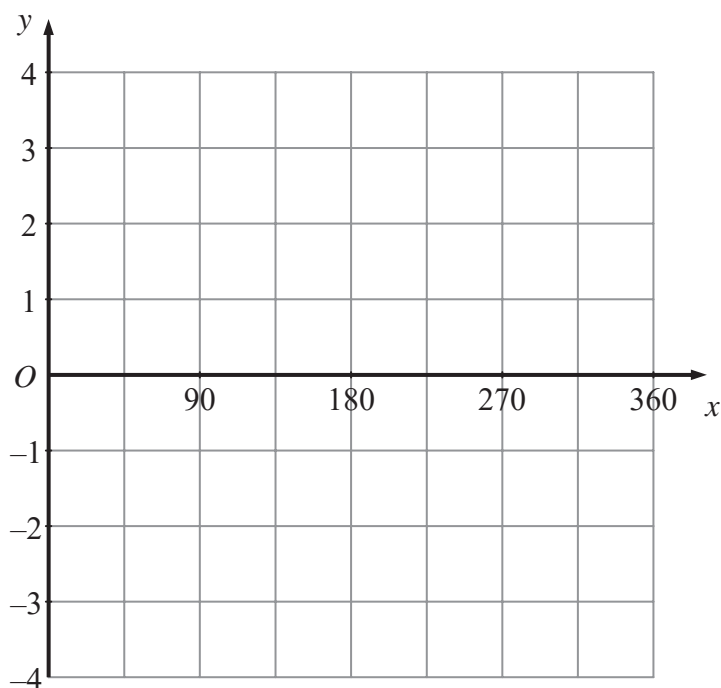
.....

(ii) $\sin 300^\circ$.

.....

(2)

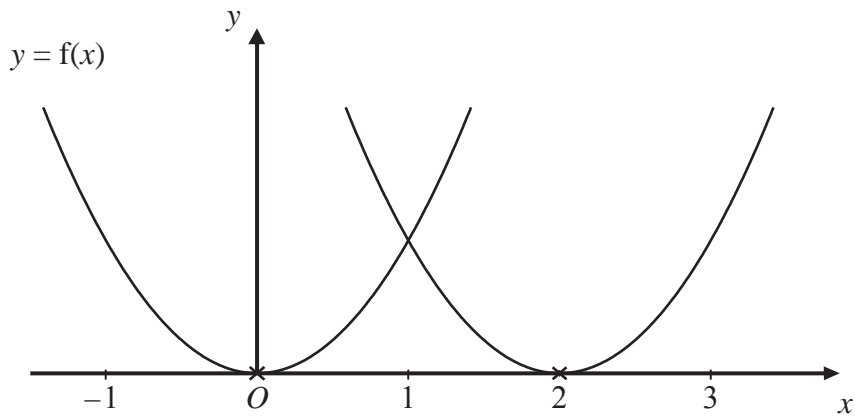
- (b) On the grid below, sketch the graph of $y = 3\sin 2x^\circ$ for $0 \leq x \leq 360$



(2)

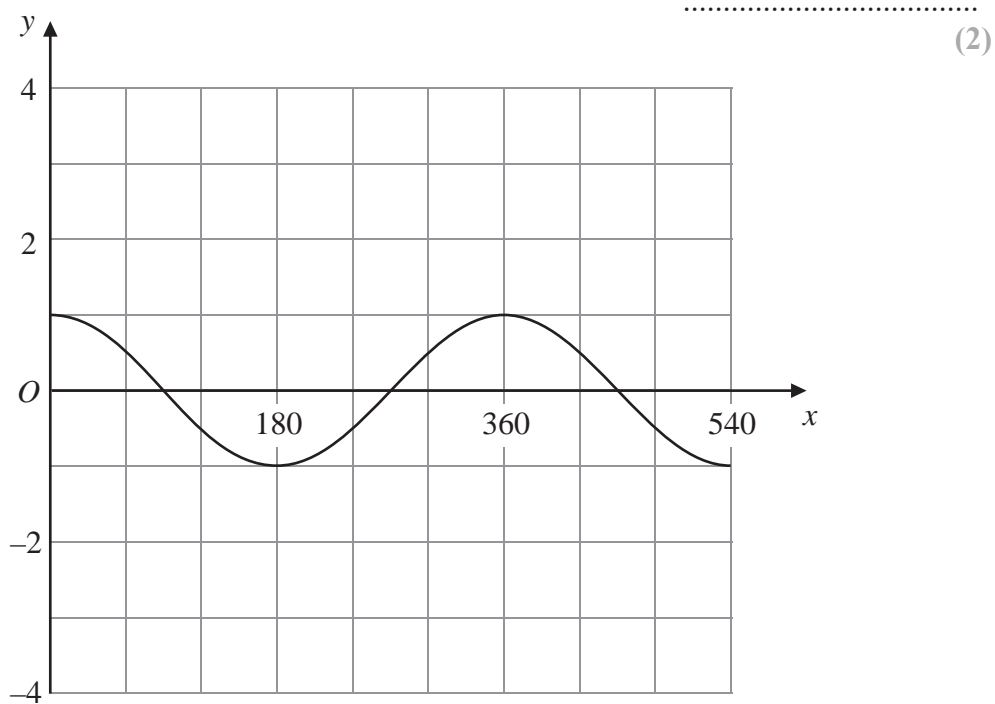
(Total for Question 3 is 4 marks)

4



The curve with equation $y = f(x)$ is translated so that the point at $(0, 0)$ is mapped onto the point $(2, 0)$.

- (a) Find an equation of the translated curve.



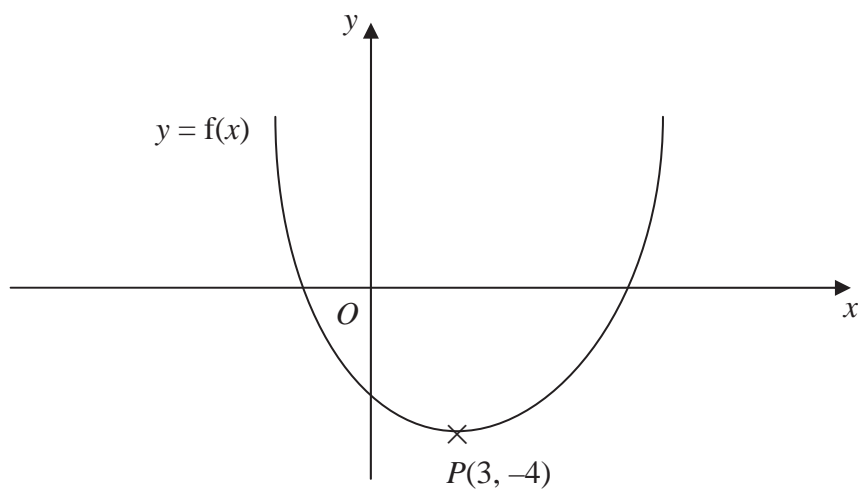
The grid shows the graph of $y = \cos x^\circ$ for values of x from 0 to 540

- (b) On the grid, sketch the graph of $y = 3 \cos(2x^\circ)$ for values of x from 0 to 540

(2)

(Total for Question 4 is 4 marks)

- 5 This is a sketch of the curve with the equation $y = f(x)$.
The only minimum point of the curve is at $P(3, -4)$.



- (a) Write down the coordinates of the minimum point of the curve with the equation $y = f(x - 2)$

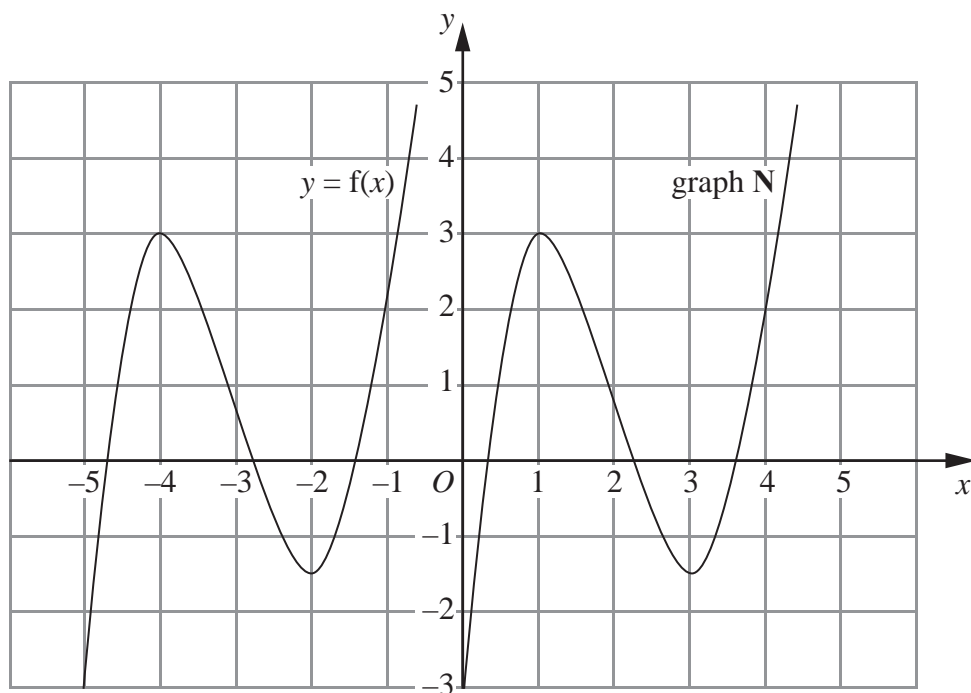
(..... ,)
(2)

- (b) Write down the coordinates of the minimum point of the curve with the equation $y = f(x + 5) + 6$

(..... ,)
(2)

(Total for Question 5 is 4 marks)

- 6 The graph of $y = f(x)$ is shown on the grid.



The graph N is a translation of the graph of $y = f(x)$.

- (a) Write down in terms of f , the equation of graph N

$y = \dots\dots\dots$
(1)

The graph of $y = f(x)$ has a maximum point at $(-4, 3)$.

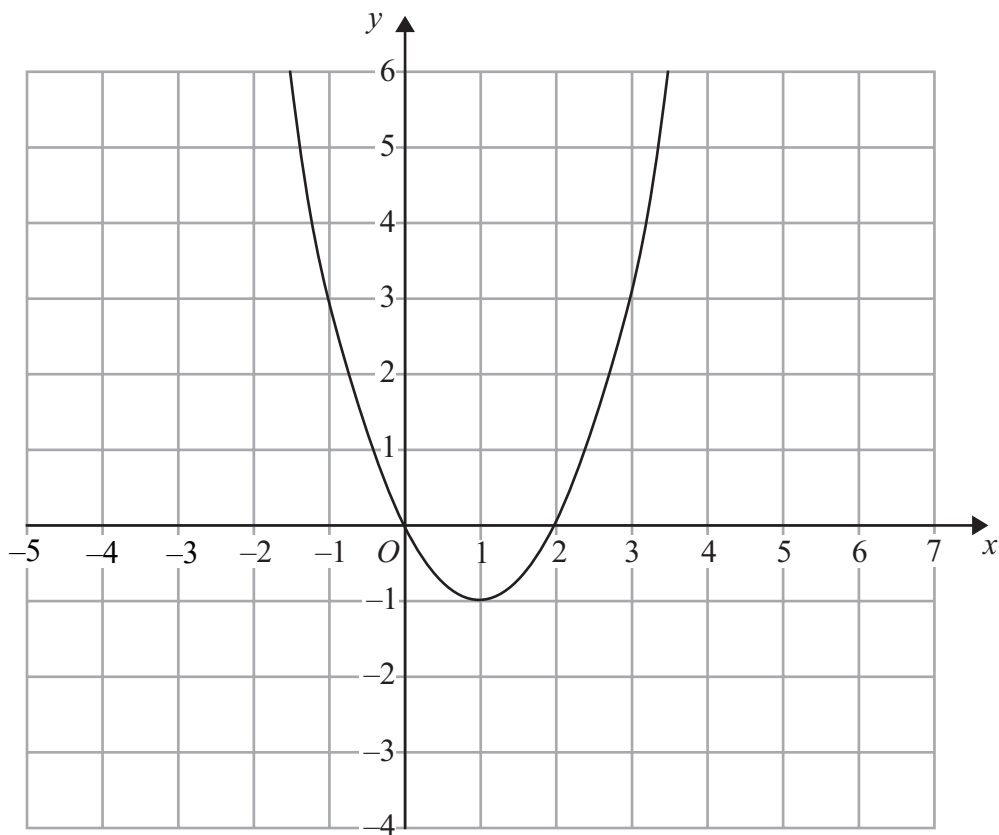
- (b) Write down the coordinates of the maximum point of the graph of $y = f(-x)$.

$(\dots\dots\dots, \dots\dots\dots)$
(2)

(Total for Question 6 is 3 marks)

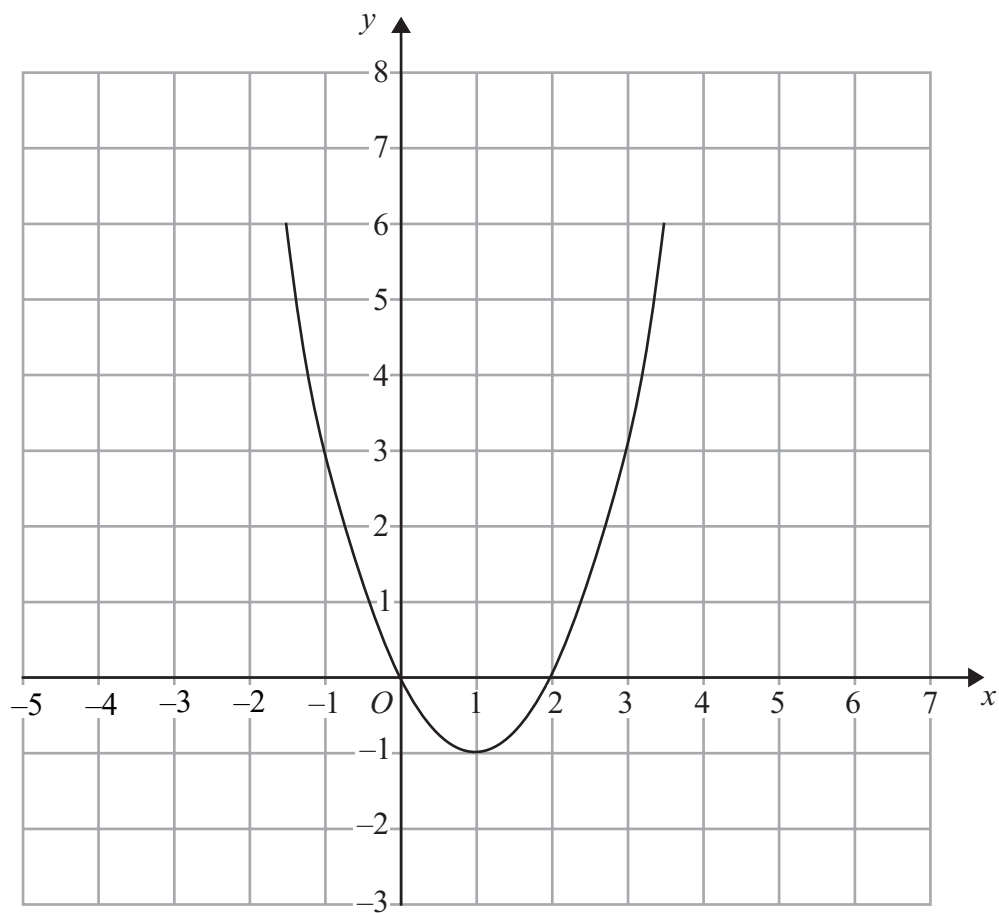
7 The graph of $y = f(x)$ is shown on each of the grids.

(a) On this grid, sketch the graph of $y = f(x - 2)$



(2)

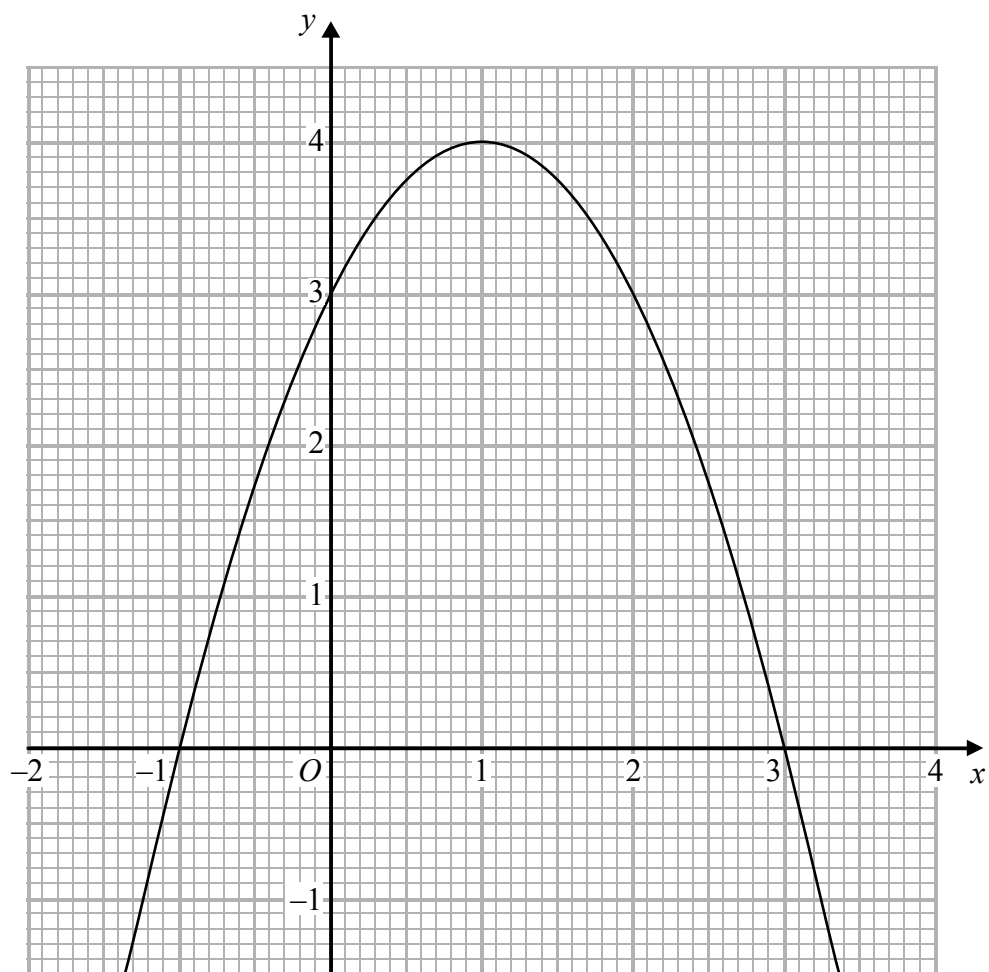
(b) On this grid, sketch the graph of $y = 2f(x)$



(2)

(Total for Question 7 is 4 marks)

8 The graph of $y = f(x)$ is drawn on the grid.



(a) Write down the coordinates of the turning point of the graph.

(.....,)

(1)

(b) Write down the roots of $f(x) = 2$

.....

(1)

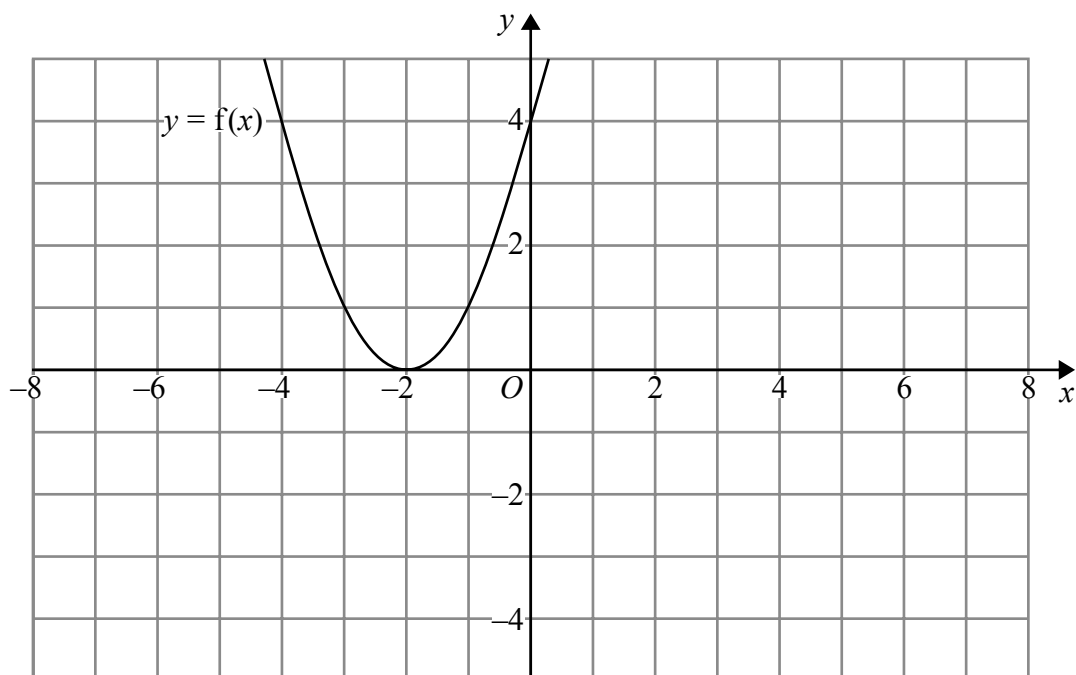
(c) Write down the value of $f(0.5)$

.....

(1)

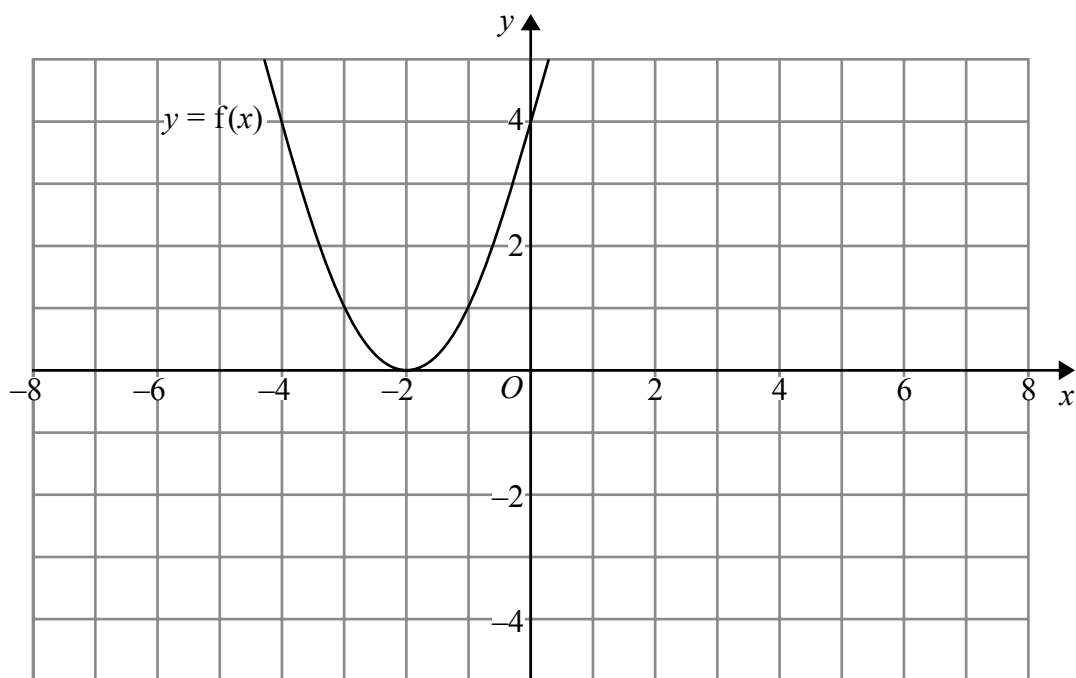
(Total for Question 8 is 3 marks)

9 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 9 is 2 marks)

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