# GCSE (1 – 9)

# Transforming Graphs

**Instructions**

• Use **black** ink or ball-point pen.
• Answer all questions.
• Answer the questions in the spaces provided
– *there may be more space than you need.*
• Diagrams are **NOT** accurately drawn, unless otherwise indicated.
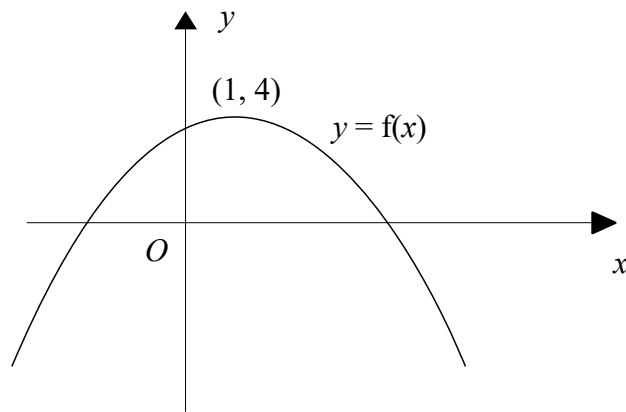• You must **show all your working out.**

**Information**

• 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

**1** The graph of $y = f(x)$ is shown below.



The coordinates of the maximum point of this curve are (1, 4).

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

(a) $y = f(x + 3)$

.............................
(1)

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

.............................
(1)

(c) $y = f(x) - 3$

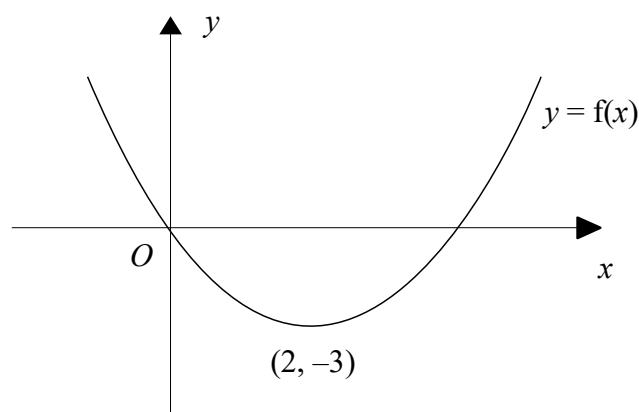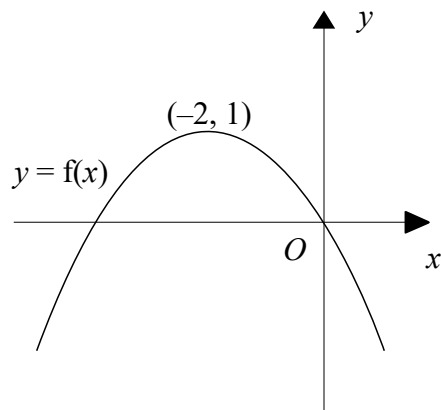.............................
(1)

(d) $y = f(-x)$

.............................
(1)

**(Total for question 1 is 4 marks)**

**2**  The graph of  $y = f(x)$  is shown below.



The coordinates of the minimum point of this curve are $(2, -3)$.

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

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

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

(1)

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

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

(1)

(c)  $y = f(x) + 2$

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

(1)

(d)  $y = f(-x)$

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

(1)

**(Total for question 2 is 4 marks)**

**3** The graph of $y = f(x)$ is shown below.



The coordinates of the maximum point of this curve are $(-2, 1)$.

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

(a) $y = f(x - 3)$

...........................
(1)

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

...........................
(1)

(c) $y = -f(x + 2)$

...........................
(1)

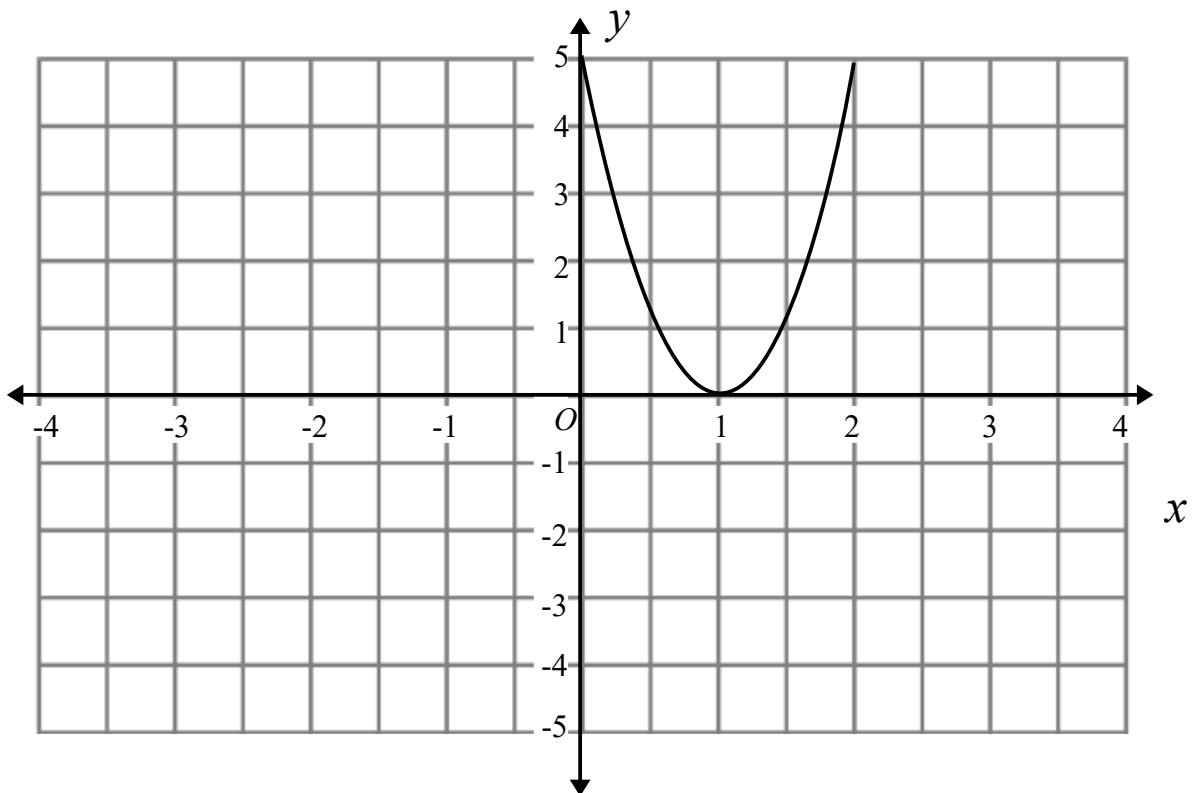(d) $y = f(-x) - 1$

...........................
(1)

**(Total for question 3 is 4 marks)**

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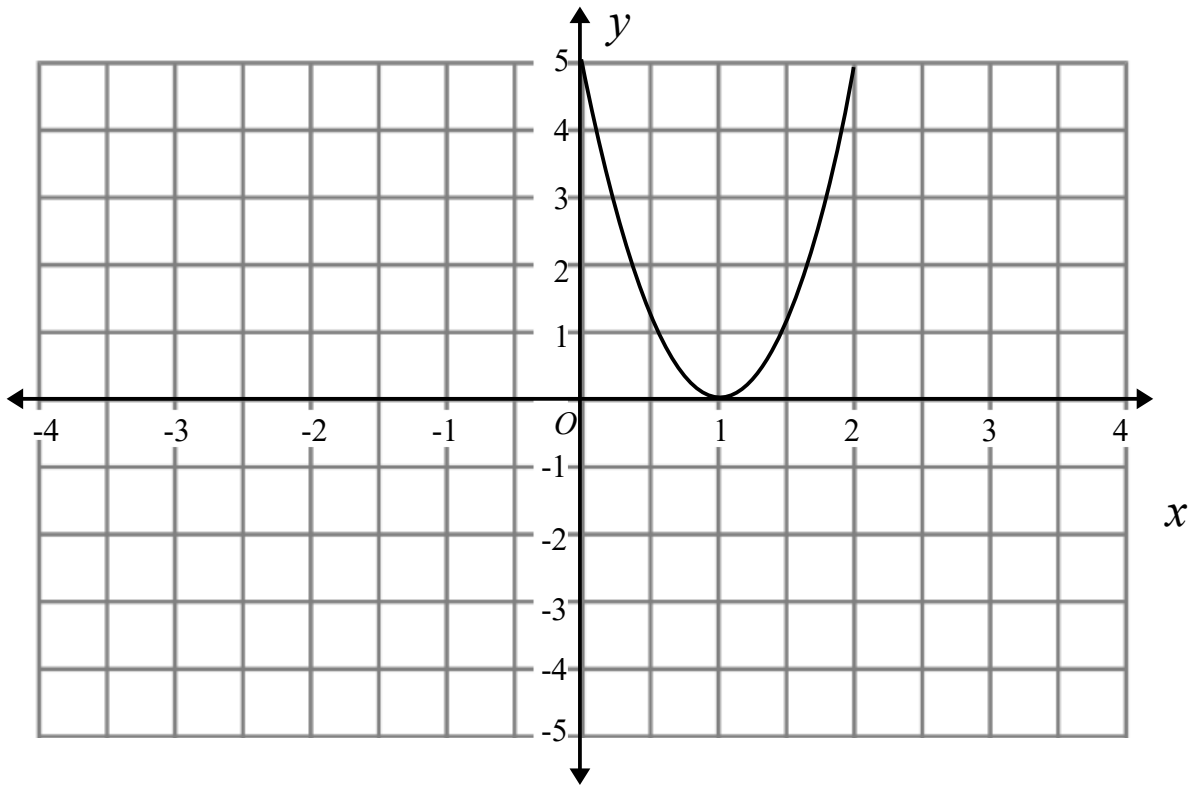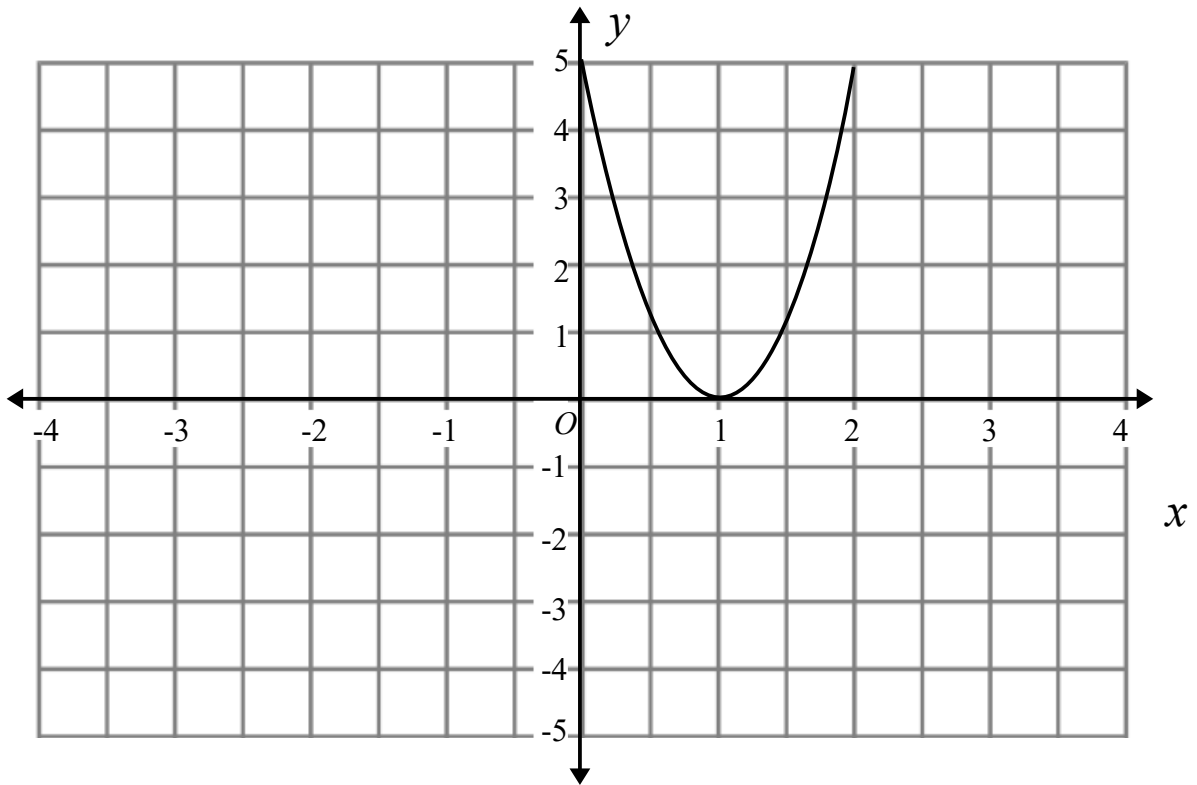


(a) On the grid above, sketch the graph of $y = -f(x)$.

(2)



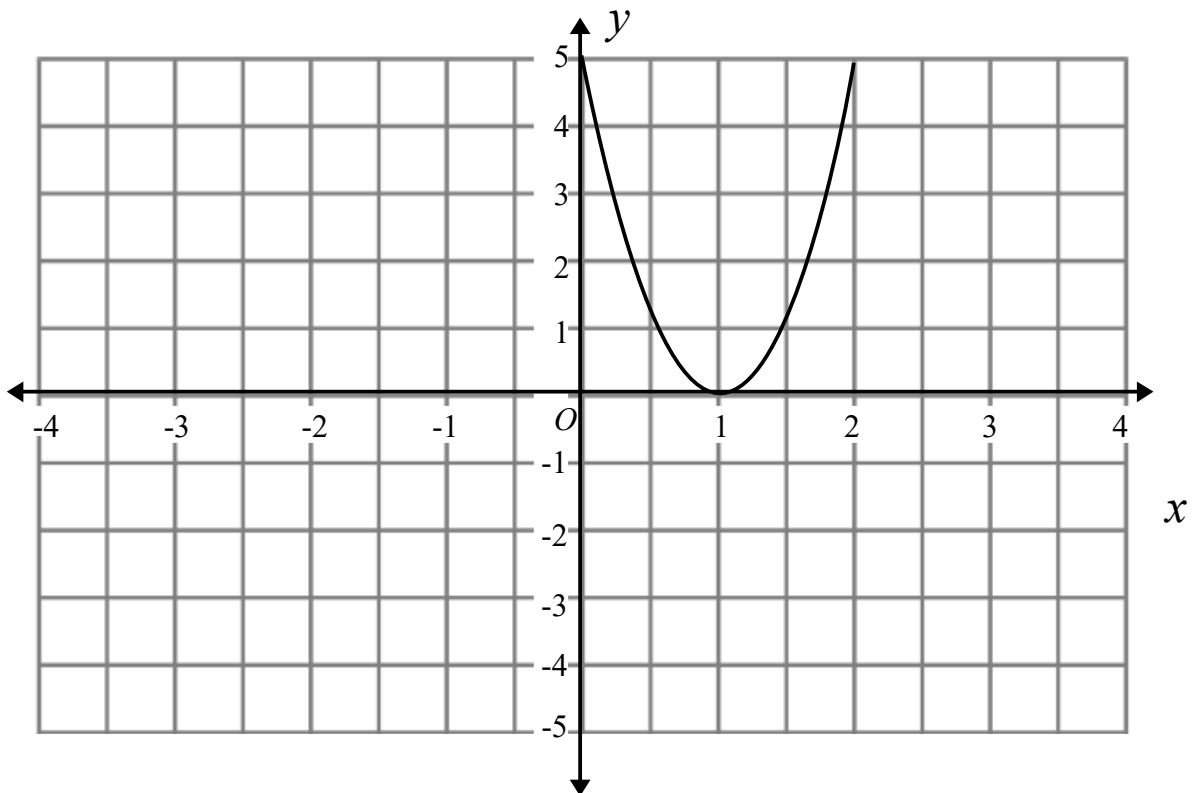(b) On the grid above, sketch the graph of $y = f(x + 2)$

(2)

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

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



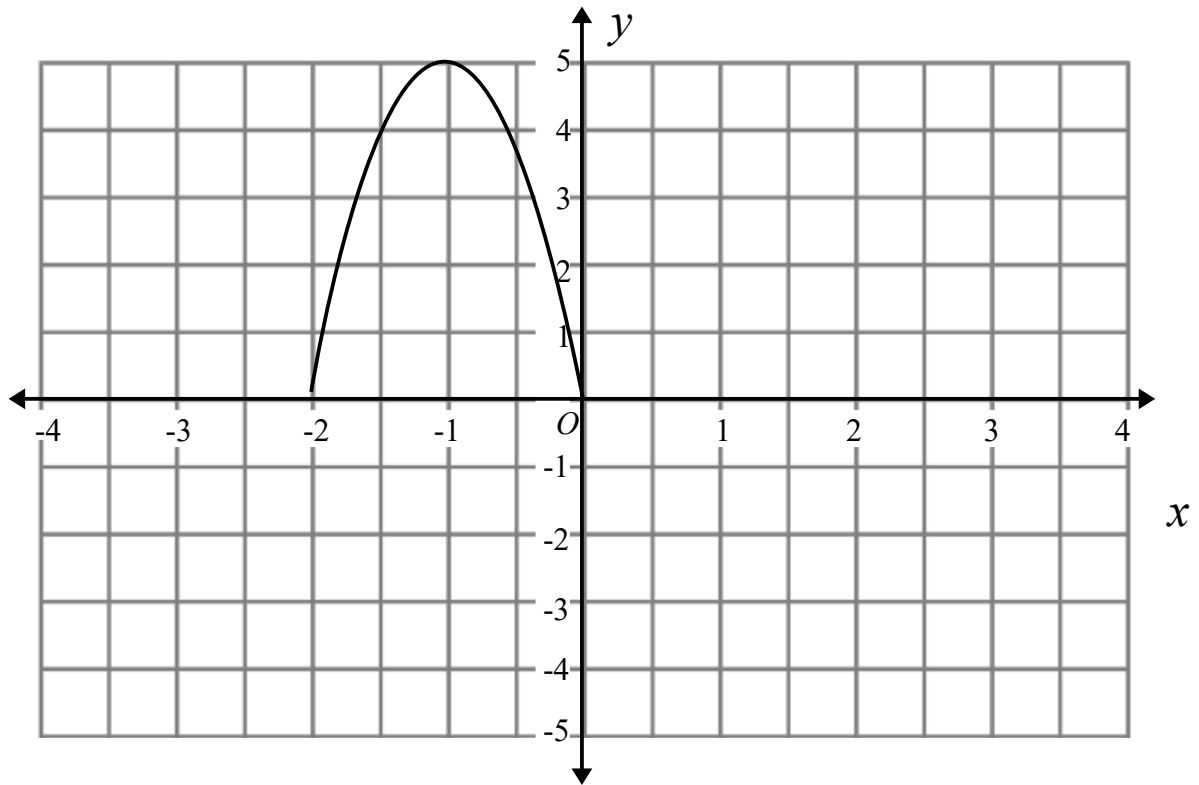(a) On the grid above, sketch the graph of $y = f(-x)$.

(2)



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

(2)

**(Total for question 5 is 4 marks)**

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



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

(2)



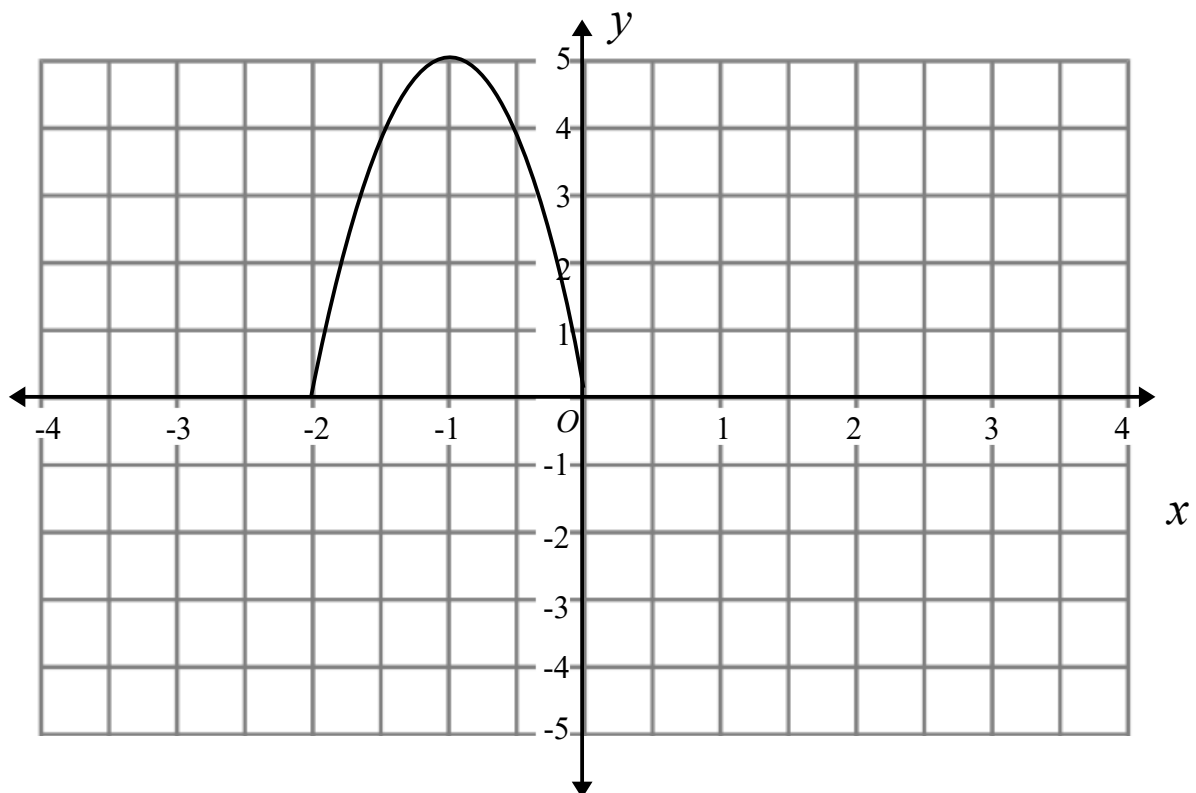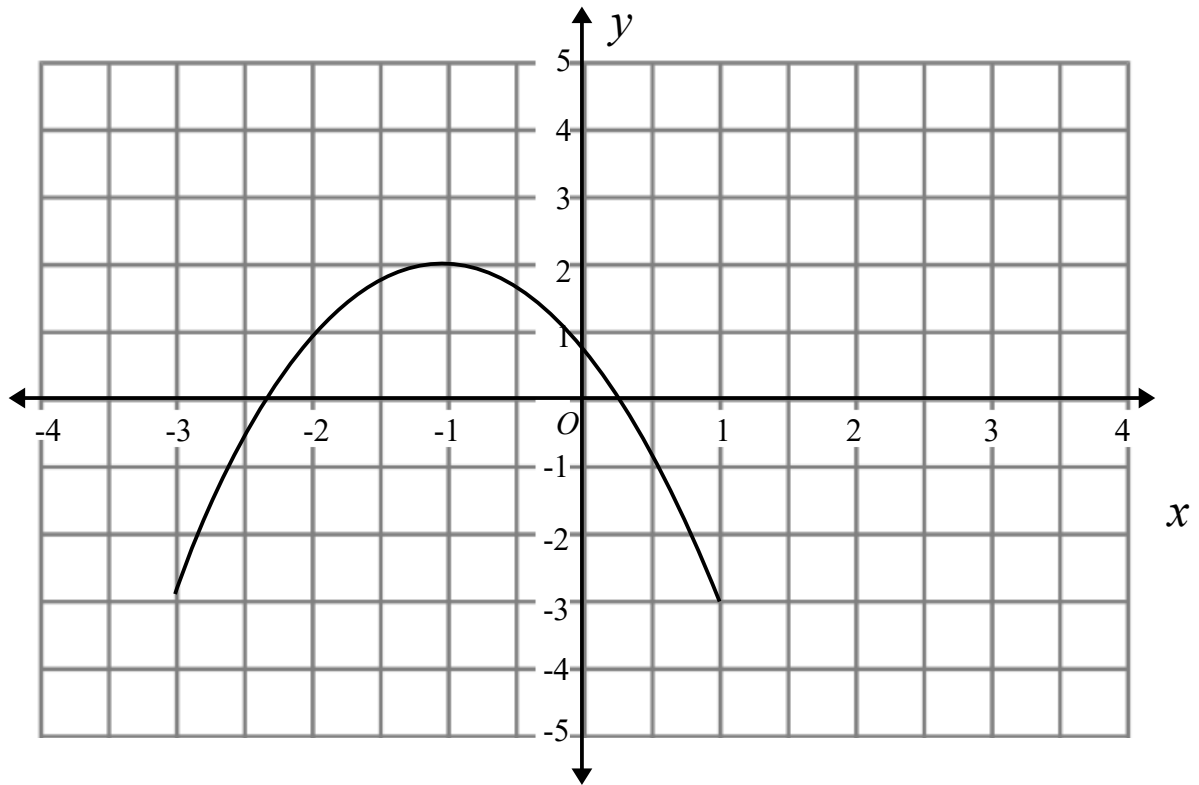(b) On the grid above, sketch the graph of $y = f(x - 1)$

(2)

**(Total for question 6 is 4 marks)**

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



(a) On the grid above, sketch the graph of $y = f(x - 1)$.

(1)

The graph of $y = f(x)$ has a turning point at $(-1, 2)$.

(b) Write down the coordinates of the turning point of $y = f(-x) + 2$

…...........................

(1)

**(Total for question 7 is 2 marks)**