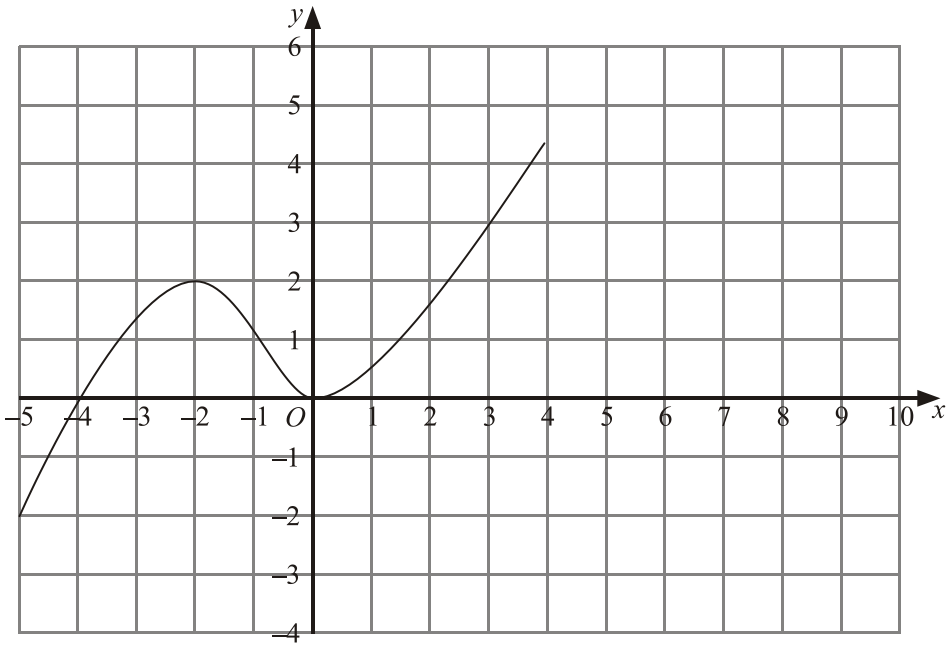
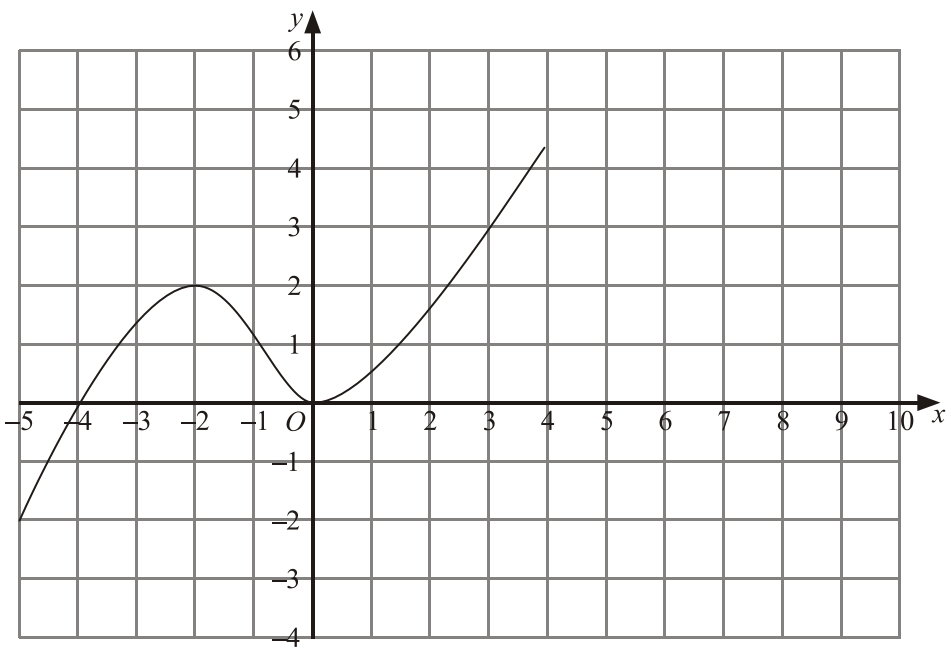
1. The graph of $y = f(x)$ is shown on the grids.

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



(2)

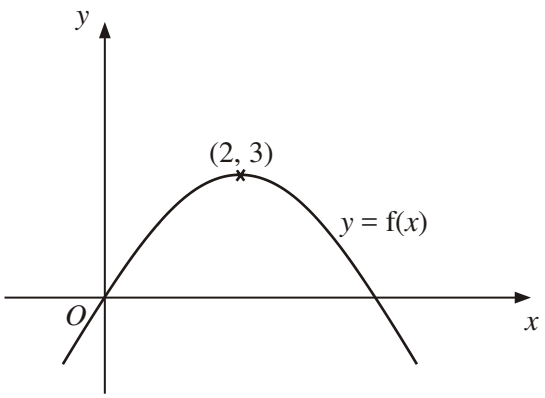
(b) On this grid, sketch the graph of $y = -f(x)$



(2)

(4 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, 3).

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

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

(..... , ...)

(1)

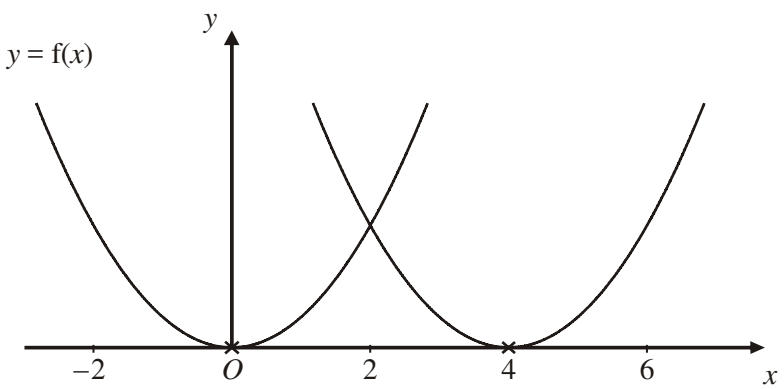
(b) $y = 2f(x)$

(..... , ...)

(1)

(2 marks)

3.



The curve with equation $y = f(x)$ is translated so that the point at (0, 0) is mapped onto the point (4, 0).

Find an equation of the translated curve.

.....

(2 marks)

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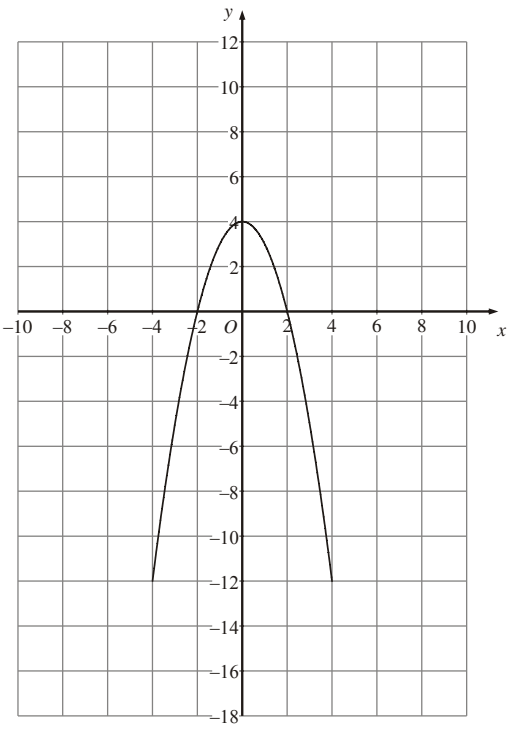
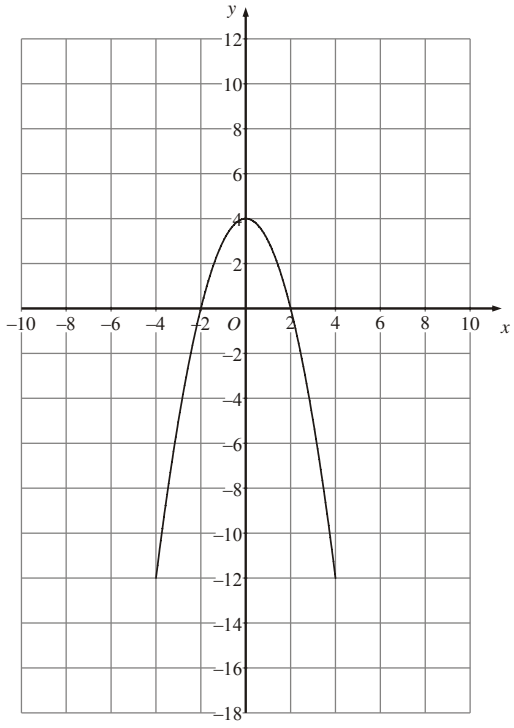
4. The graph of $y = f(x)$ is shown on the grids.

(a) On this grid, sketch the graph of $y = f(x) - 4$



(2)

(b) On this grid, sketch the graph of $y = f(\frac{1}{2}x)$.

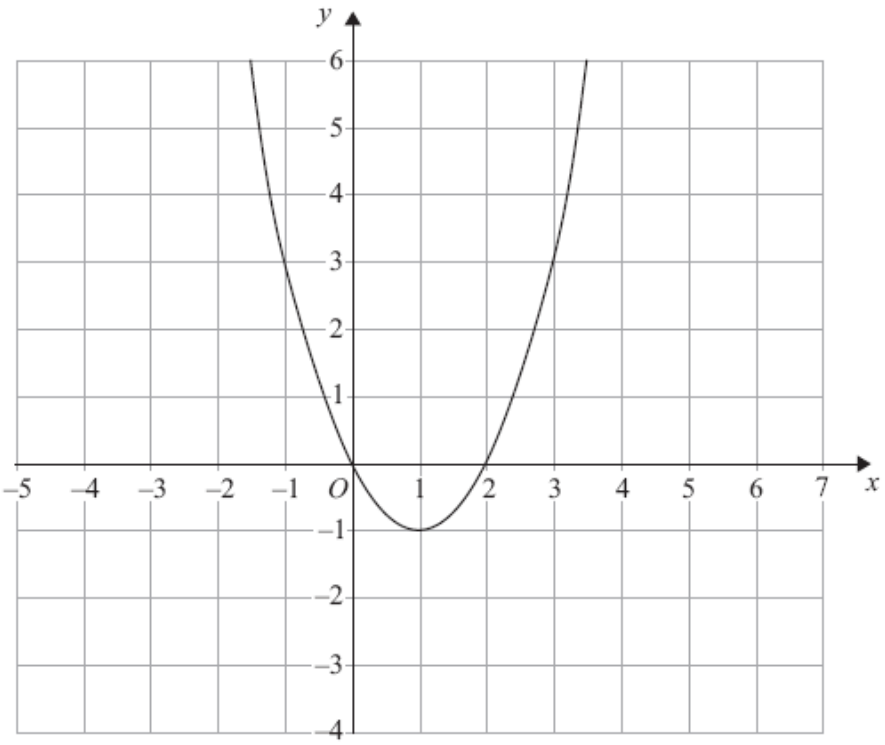


(2)

(4 marks)

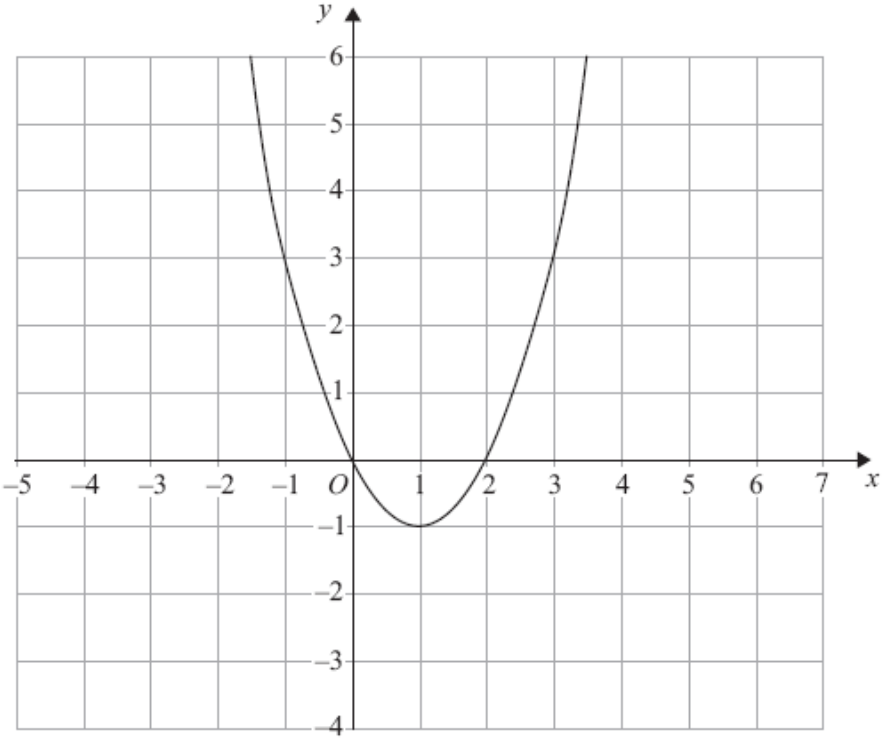
5. The graph of $y = f(x)$ is shown on each of the grids.

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



(2)

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

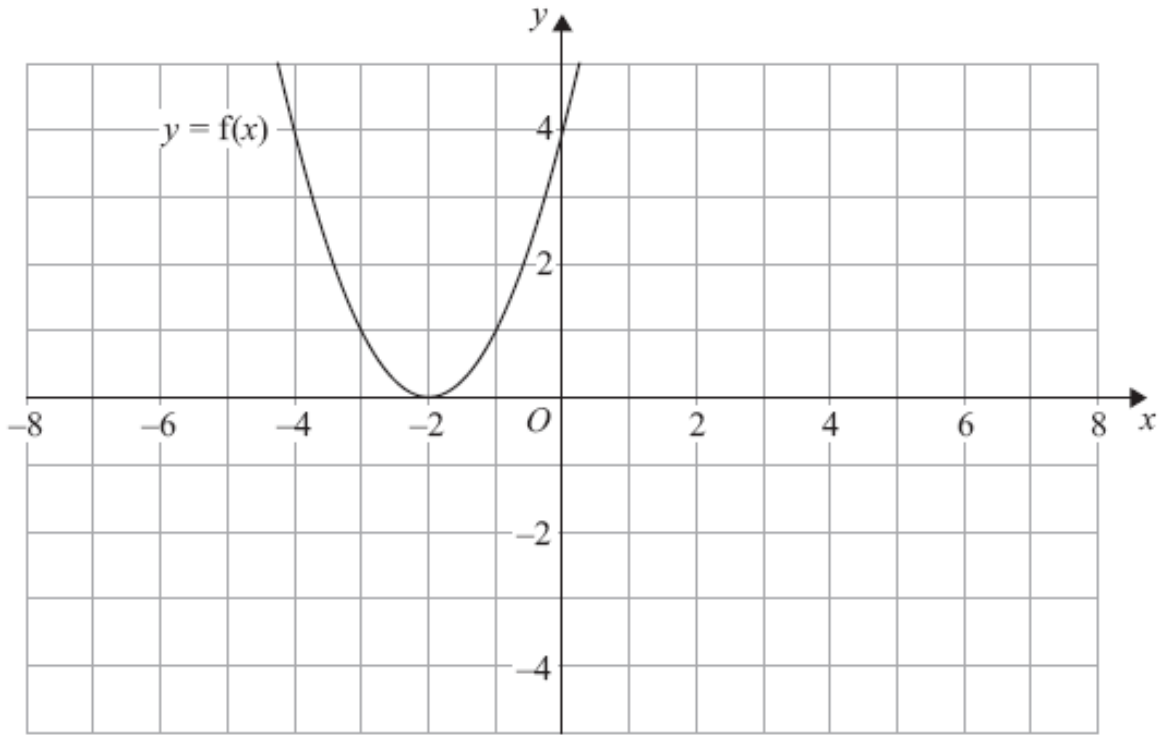


(2)

(4 marks)

6. $y = f(x)$

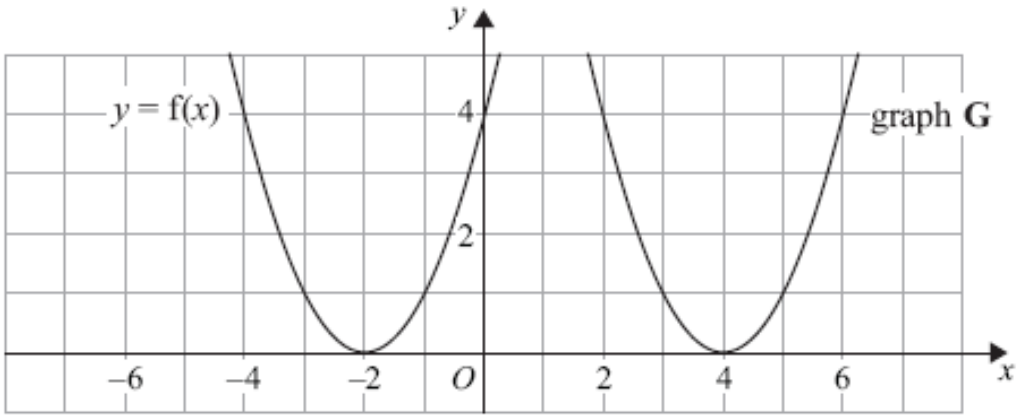
The graph of $y = f(x)$ is shown on the grid.



(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 $y = f(x)$.

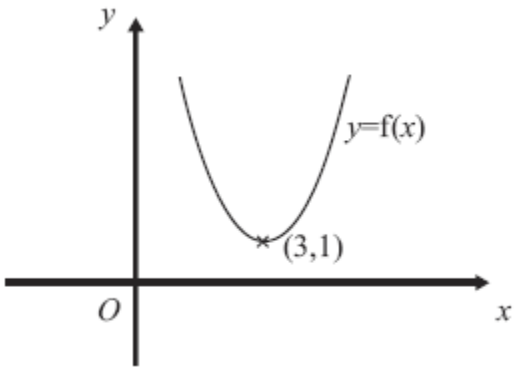
(b) Write down the equation of graph **G**.

.....

(2)

(4 marks)

7.



The diagram shows part of the curve with equation $y = f(x)$.
The coordinates of the minimum point of this curve are (3, 1).

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

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

(1)

(……, ……)

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

(1)

(……, ……)

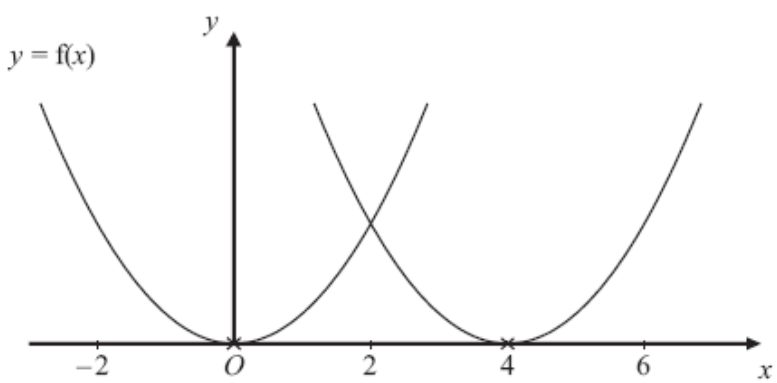
(c) $y = f\left(\frac{1}{2}x\right)$

(1)

(……, ……)

(3 marks)

8.



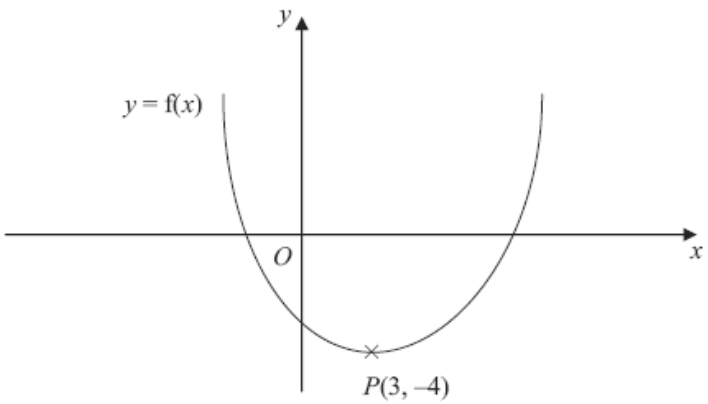
The curve with equation $y = f(x)$ is translated so that the point at (0, 0) is mapped onto the point (4, 0).

Find an equation of the translated curve.

.....

(2 marks)

9. 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)

(4 marks)