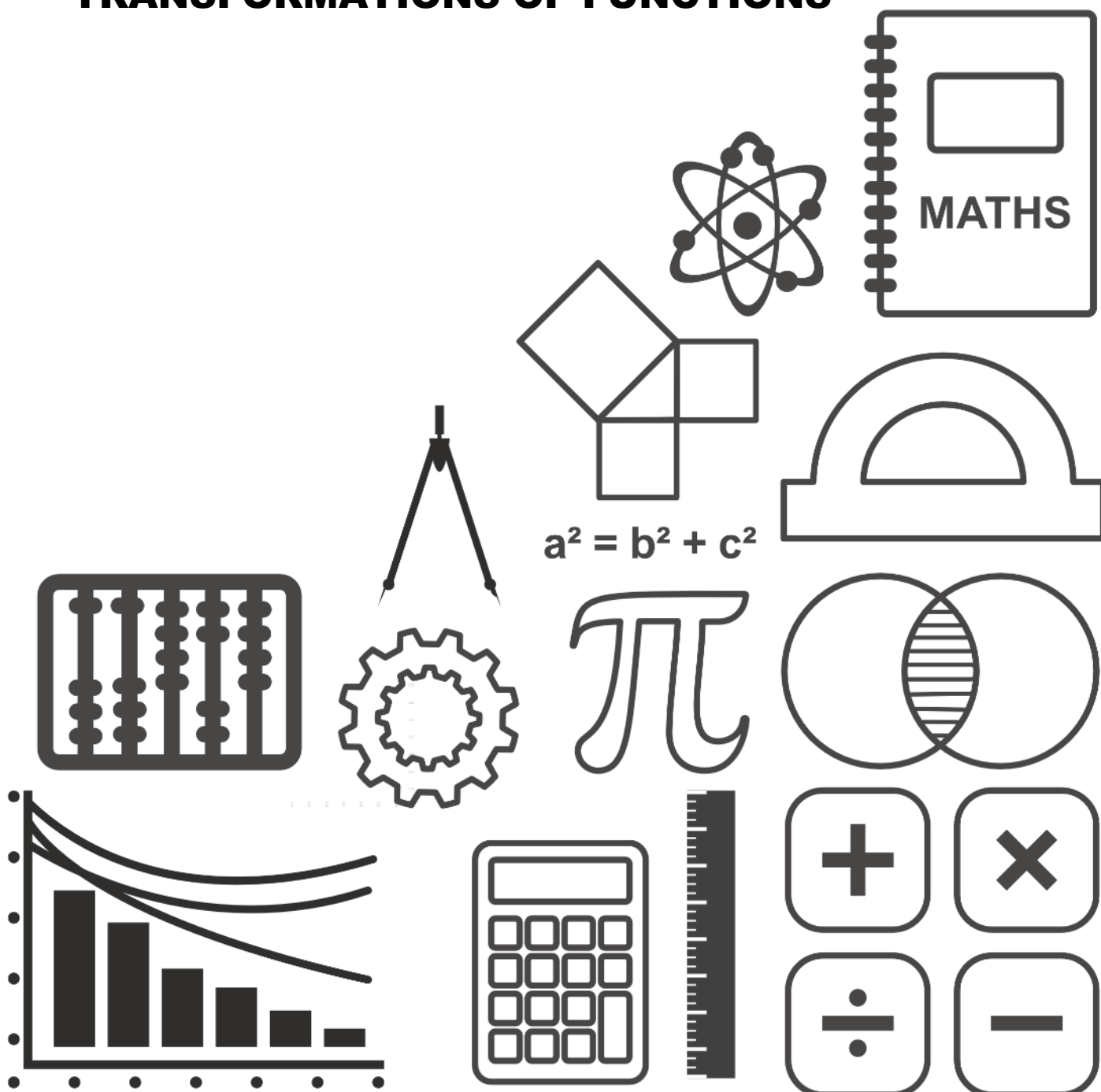
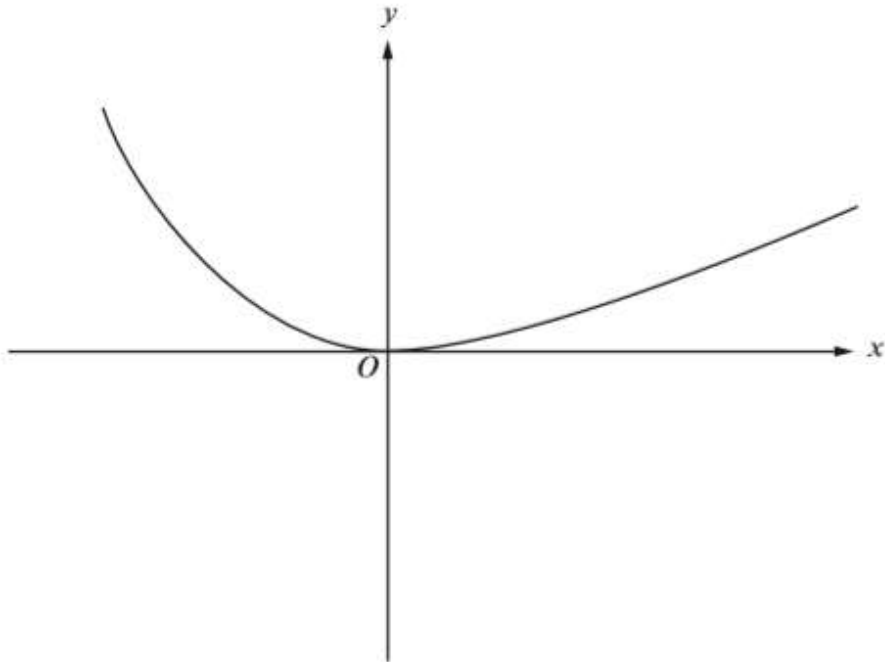


# MATHSDIY

## GCSE TOPIC BOOKLET TRANSFORMATIONS OF FUNCTIONS

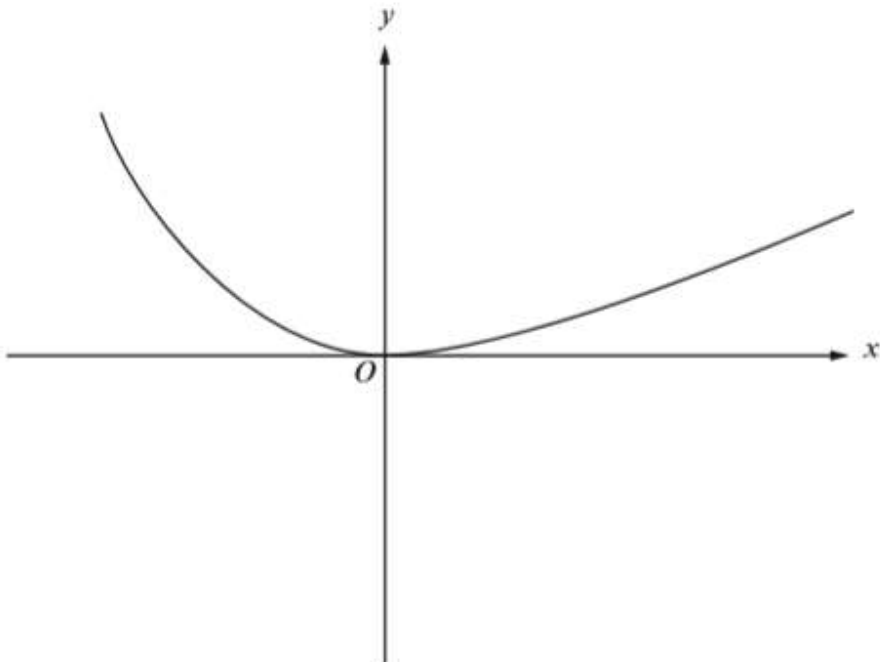


1. (a) The diagram shows a sketch of  $y = f(x)$ .  
 On the same diagram, sketch the curve  $y = f(x - 2)$ .  
 Mark clearly the coordinates of the point where this curve touches an axis.



[2]

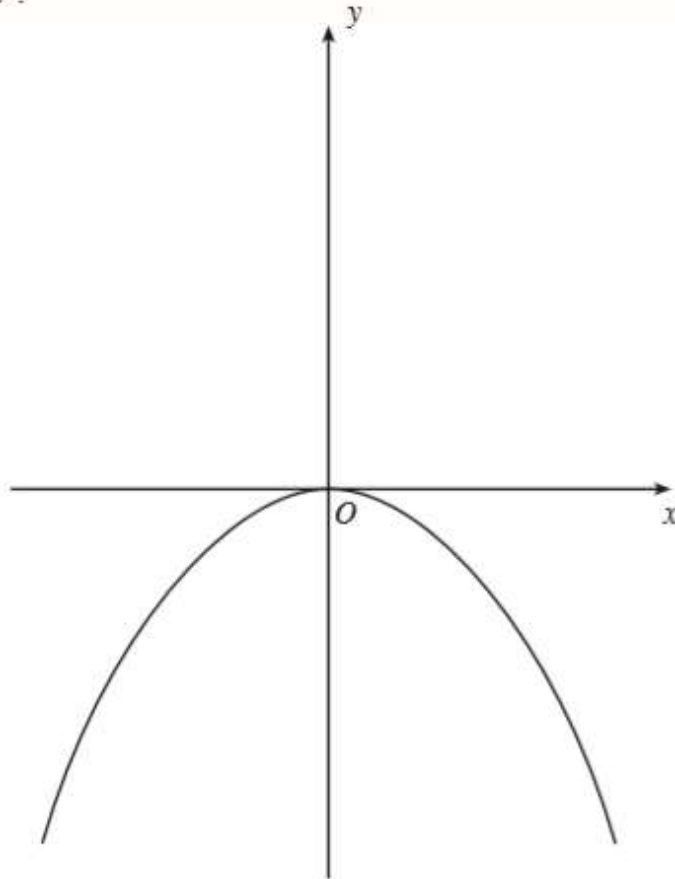
- (b) The diagram shows another sketch of  $y = f(x)$ .  
 On the same diagram, sketch the curve  $y = -f(x) + 3$ .  
 Mark clearly the coordinates of the point where this curve meets the  $y$ -axis.



[3]

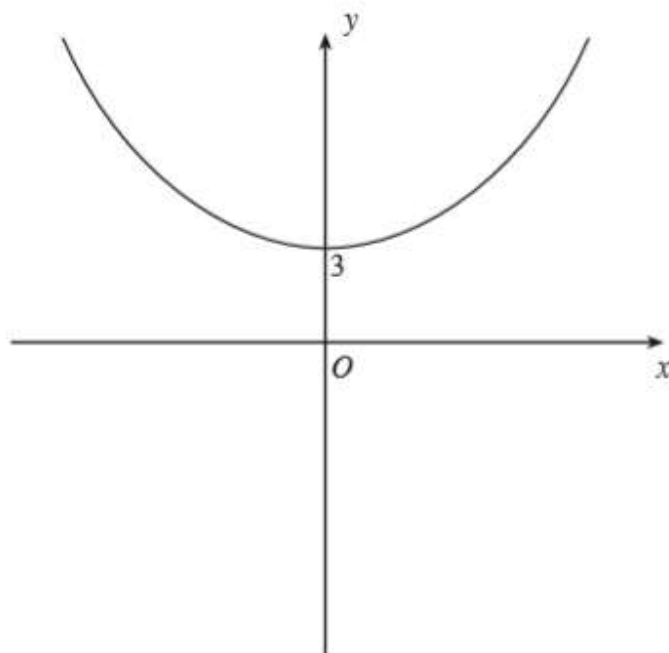
2. (a) The diagram shows the sketch of  $y = -x^2$ .  
On the same diagram, sketch the curve

- (i)  $y = x^2$ .
- (ii)  $y = 4x^2$ .



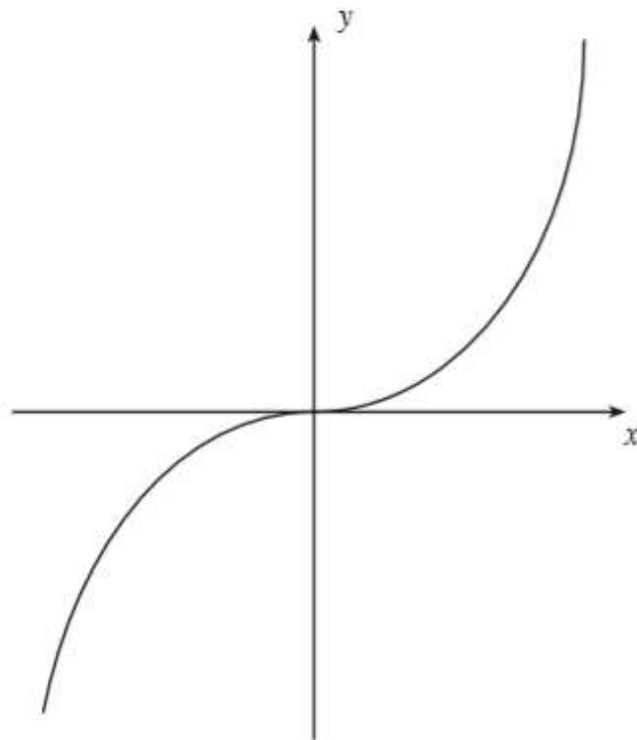
[2]

- (b) The diagram shows a sketch of  $y = f(x)$ .  
On the same diagram, sketch the curve  $y = f(x) - 6$ .  
Mark clearly the coordinates of the point where the curve crosses the y-axis.

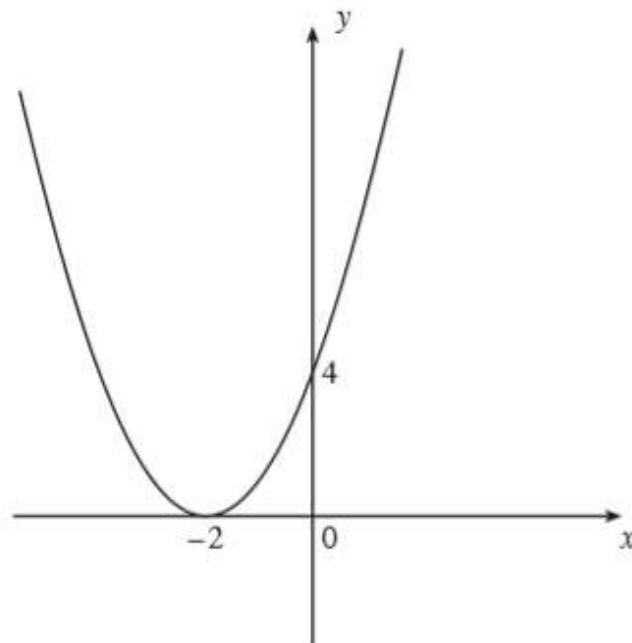


[2]

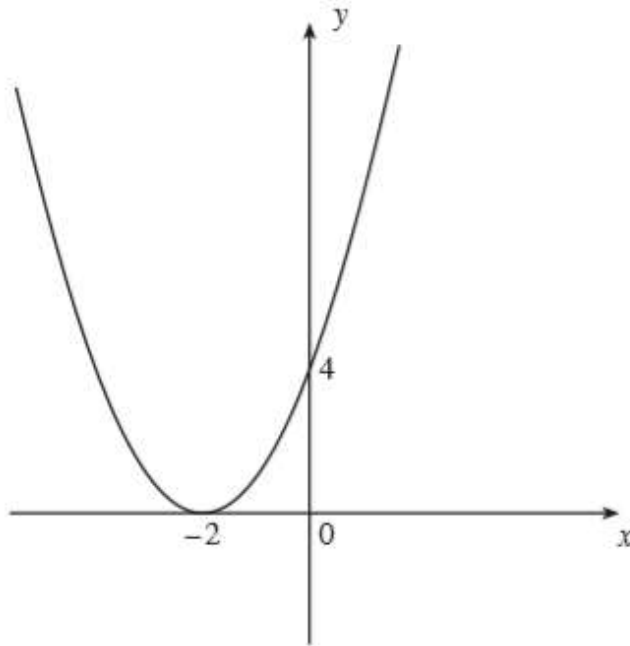
- 3.(a) The diagram shows the sketch of  $y = x^3$ . On the same diagram, sketch the curve  $y = -x^3$ . [1]



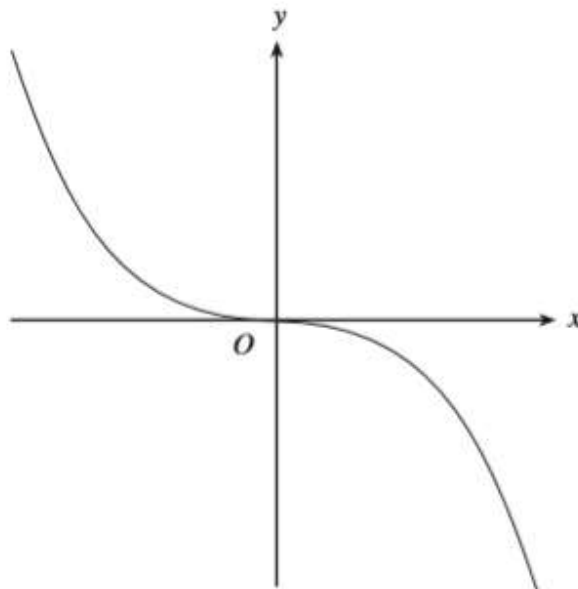
- (b) The diagram shows a sketch of  $y = f(x)$ . On the same diagram, sketch the curve  $y = f(x - 2)$ . Mark clearly the coordinates of the points where the curve crosses or touches the  $x$ -axis or  $y$ -axis. [2]



- (c) 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 points where the curve crosses or touches the  $x$ -axis or  $y$ -axis. [2]

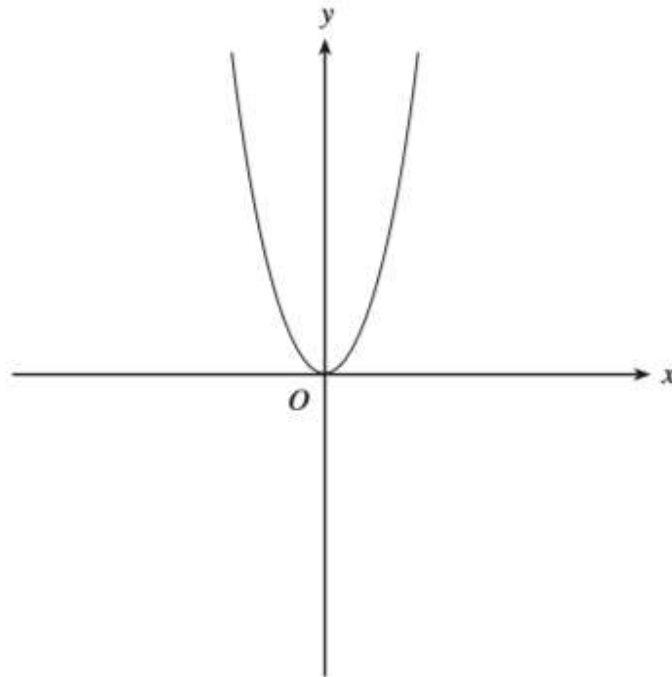


4. (a) The diagram shows a sketch of  $y = -x^3$ . On the same diagram, sketch the curve  $y = -2x^3$ . [1]



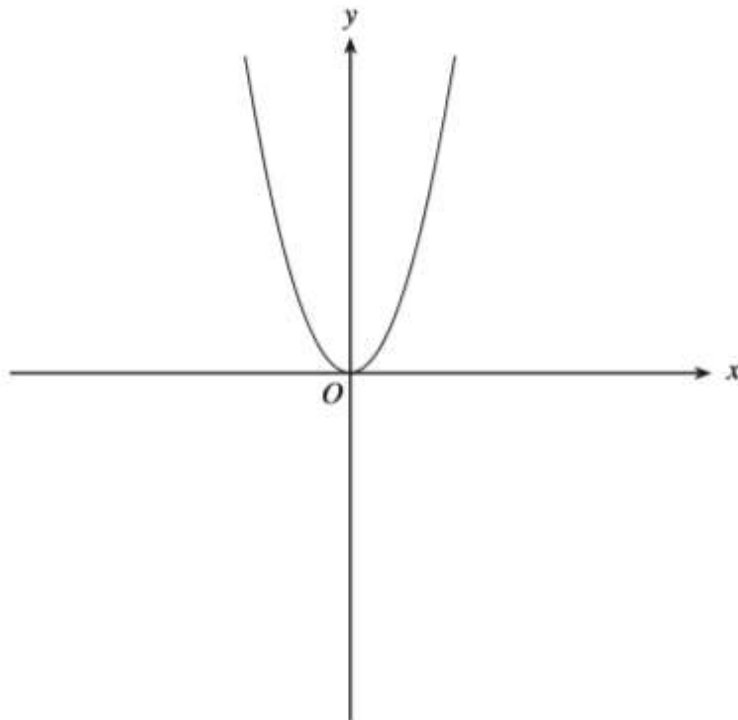
- (b) The diagram shows a sketch of  $y = f(x)$ .  
 On the same diagram, sketch the curve  $y = f(x + 5)$ .  
 Indicate the coordinates of one point on the curve.

[2]

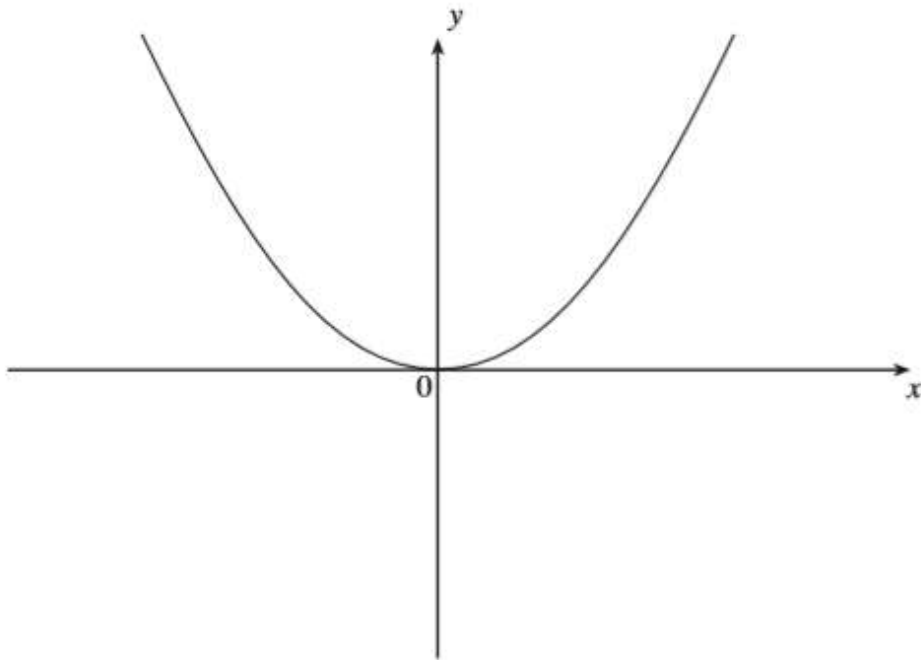


- (c) The diagram shows a sketch of  $y = f(x)$ .  
 On the same diagram, sketch the curve  $y = f(x) - 3$ .  
 Indicate the coordinates of one point on the curve.

[2]

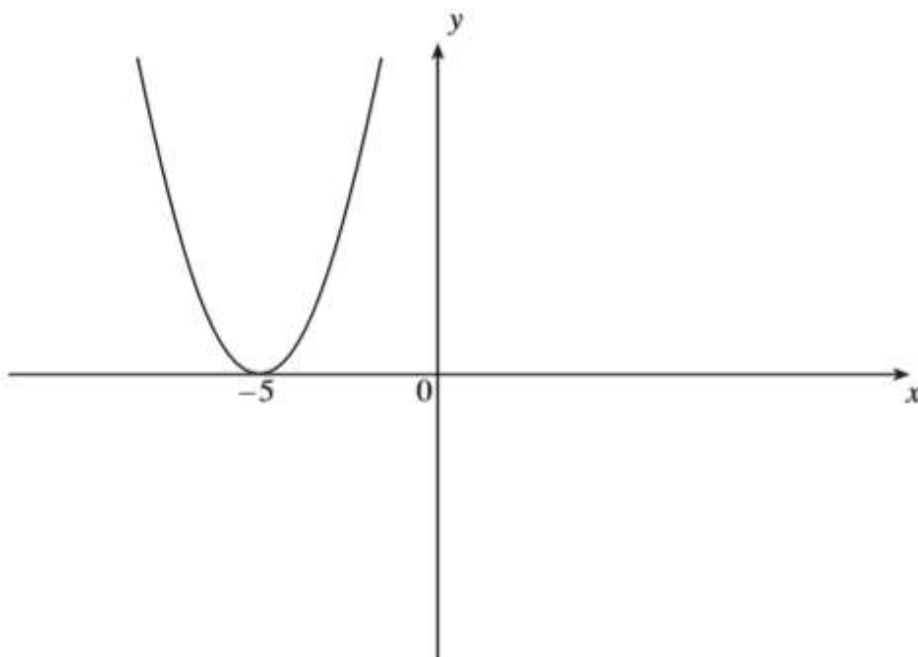


5. (a) The diagram shows a sketch of  $y = x^2$ .  
 On the same diagram sketch the curve  $y = x^2 - 4$ .  
 Mark clearly the coordinates of the point where the curve meets the y-axis.



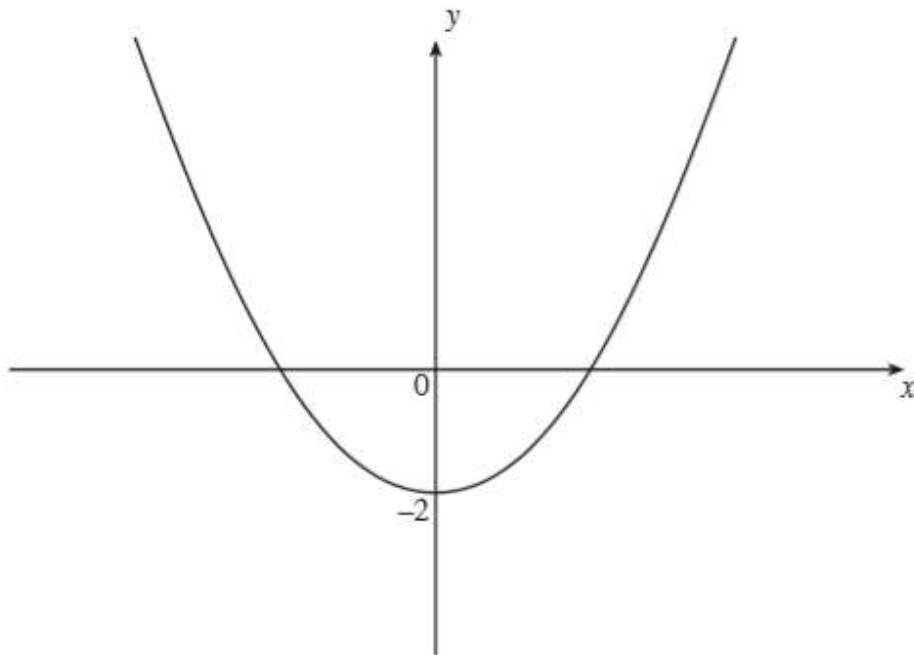
[2]

- (b) The diagram shows the sketch of  $y = f(x)$ .  
 On the same diagram sketch the curve  $y = f(x - 5)$ .  
 Mark clearly the point where the curve meets the x-axis.



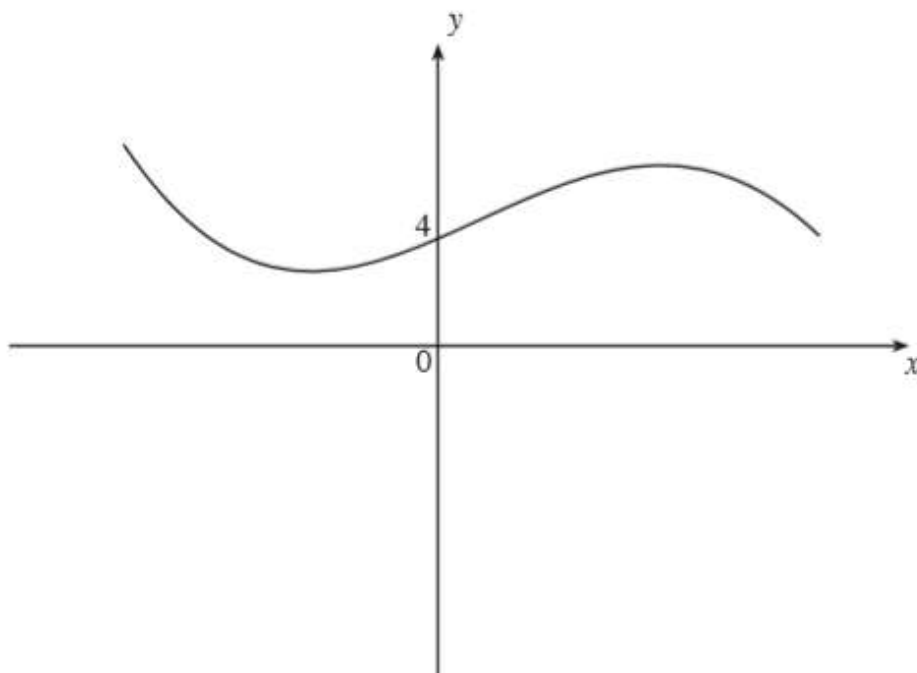
[2]

6. (a) The diagram shows a sketch of  $y = f(x)$ .  
 On the same diagram, sketch the curve  $y = f(x) + 5$ .  
 Mark clearly the value of  $y$  at the point where this curve crosses the  $y$ -axis.



[2]

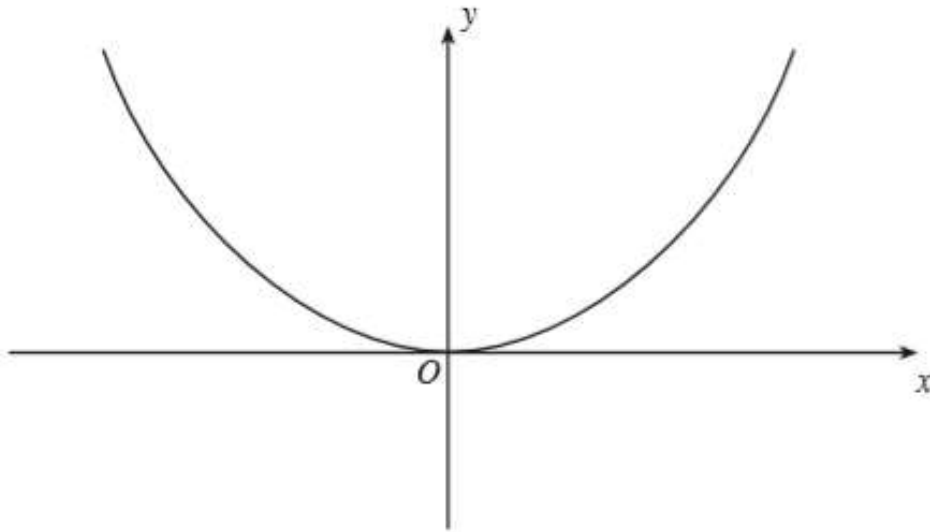
- (b) The diagram shows a sketch of  $y = g(x)$ .  
 On the same diagram, sketch the curve  $y = -g(x)$ .  
 Mark clearly the value of  $y$  at the point where this curve crosses the  $y$ -axis.



[2]

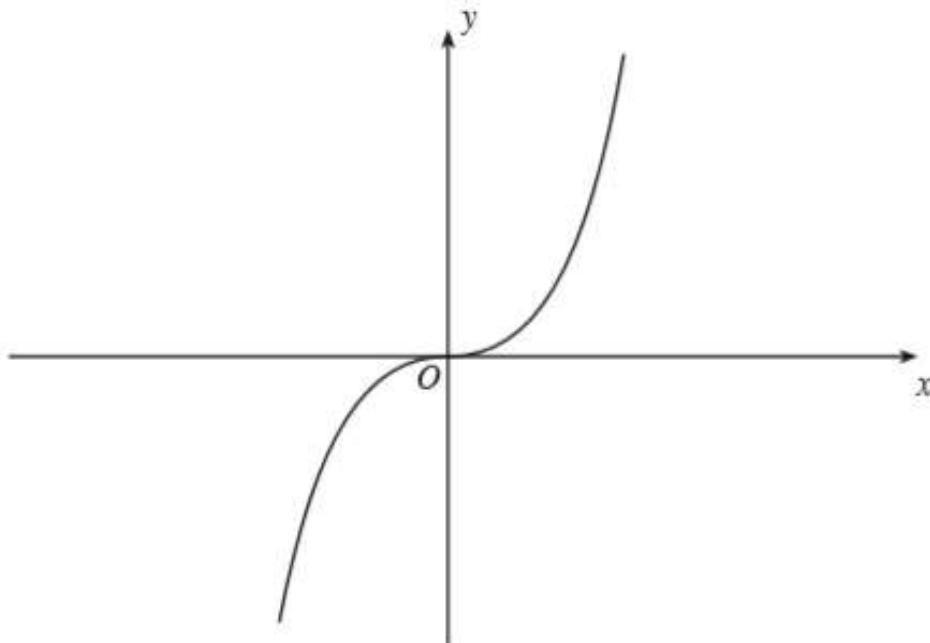


7. (a) The diagram shows a sketch of  $y = x^2$ .  
 On the same diagram, sketch the curve  $y = x^2 + 4$ .  
 Mark clearly the coordinates of the point where the curve meets the  $y$ -axis.



[2]

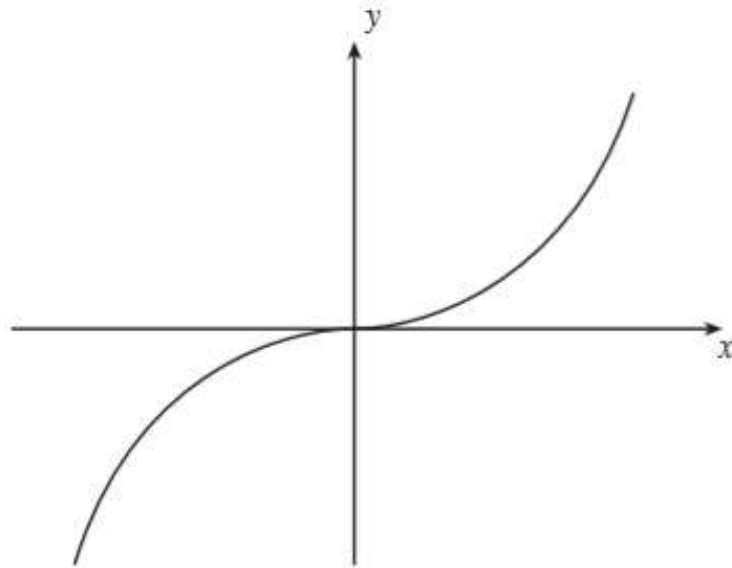
- (b) The diagram shows the sketch of  $y = f(x)$ .  
 On the same diagram sketch the curve  $y = f(x - 3)$ .  
 Mark clearly the co-ordinates of the point where the curve meets the  $x$ -axis.



[2]

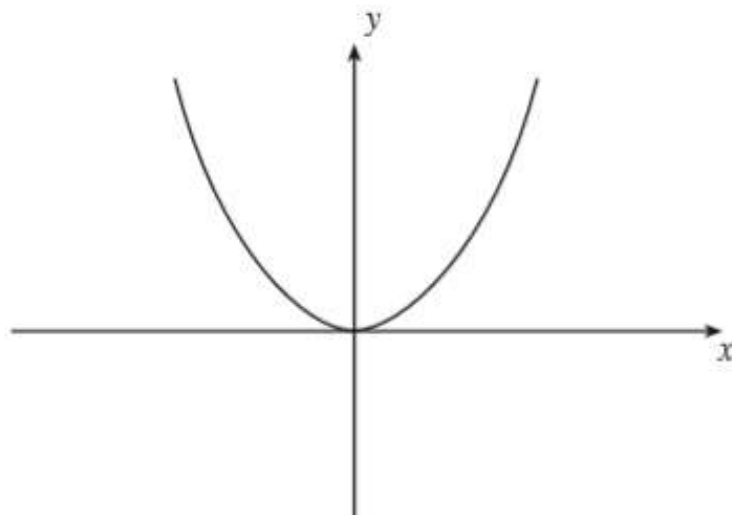
8. (a) The diagram shows a sketch of  $y = f(x)$ .  
On the same diagram, sketch the curve  $y = 3f(x)$ .

[1]



- (b) The diagram shows a sketch of  $y = g(x)$ .  
On the same diagram, sketch the curve  $y = g(x + 6)$ . Mark clearly the coordinates of the point where the curve meets the  $x$ -axis.

[2]

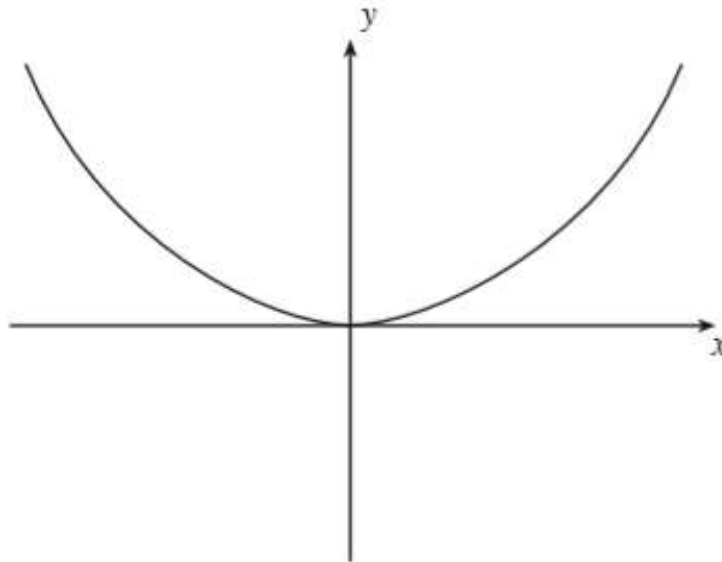


(c) The diagram shows the sketch of  $y = h(x)$ .  
On the same diagram sketch the curves

(i)  $y = -h(x)$ , and

(ii)  $y = -h(x) - 1$ , mark clearly the coordinates of the point where the curve crosses the  $y$ -axis.

[3]



9. The diagram shows a sketch of  $y = -x^3$ .  
On the same diagram, sketch the curve  $y = -2x^3$ .

[1]

