Name:

Exam Style Questions

Transformations of Graphs

Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You may use tracing paper if needed

Guidance

1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings
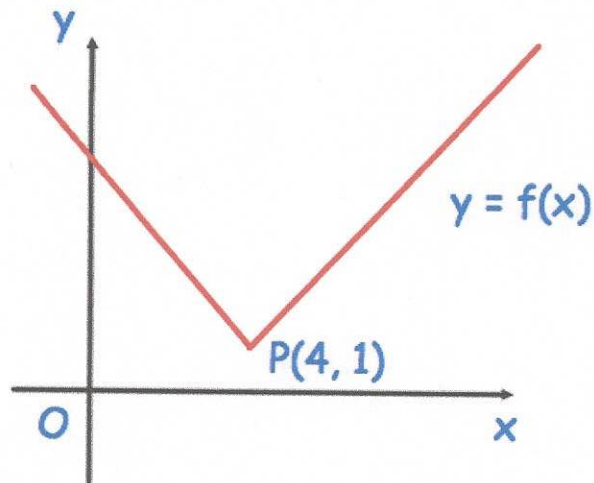
Revision for this topic

www.corbettmaths.com/contents

Video 323
Video 324

1. Here is the graph of $y = f(x)$
   The point P(4, 1) is a point on the graph.

What are the coordinates of the new position of P when the graph $y = f(x)$ is transformed to the graph of

(a) $y = -f(x)$
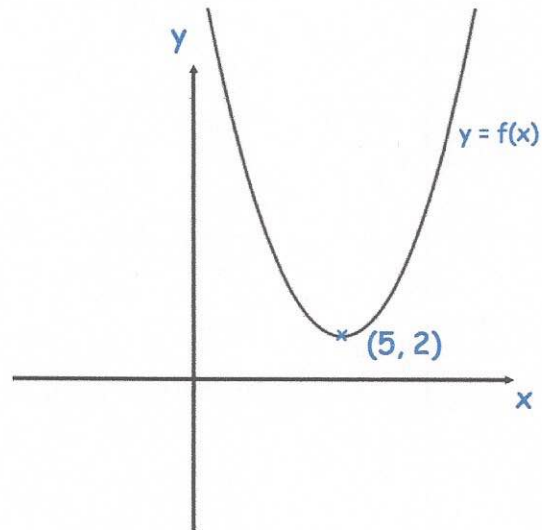
(.....4.... , ...-1....)

(1)

(b) $y = f(x) + 4$

(.....4.... , ...5....)

(1)

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

(.....-4.... , ...1....)

(1)

(d) $y = f(x + 5)$

(.....-1.... , ...1....)

(1)

2.

y = f(x)

(5, 2)

Shown is the curve with equation $y = f(x)$
The coordinates of the minimum point of the curve are (5, 2).

Write down the coordinates of the minimum point of the curve with equation
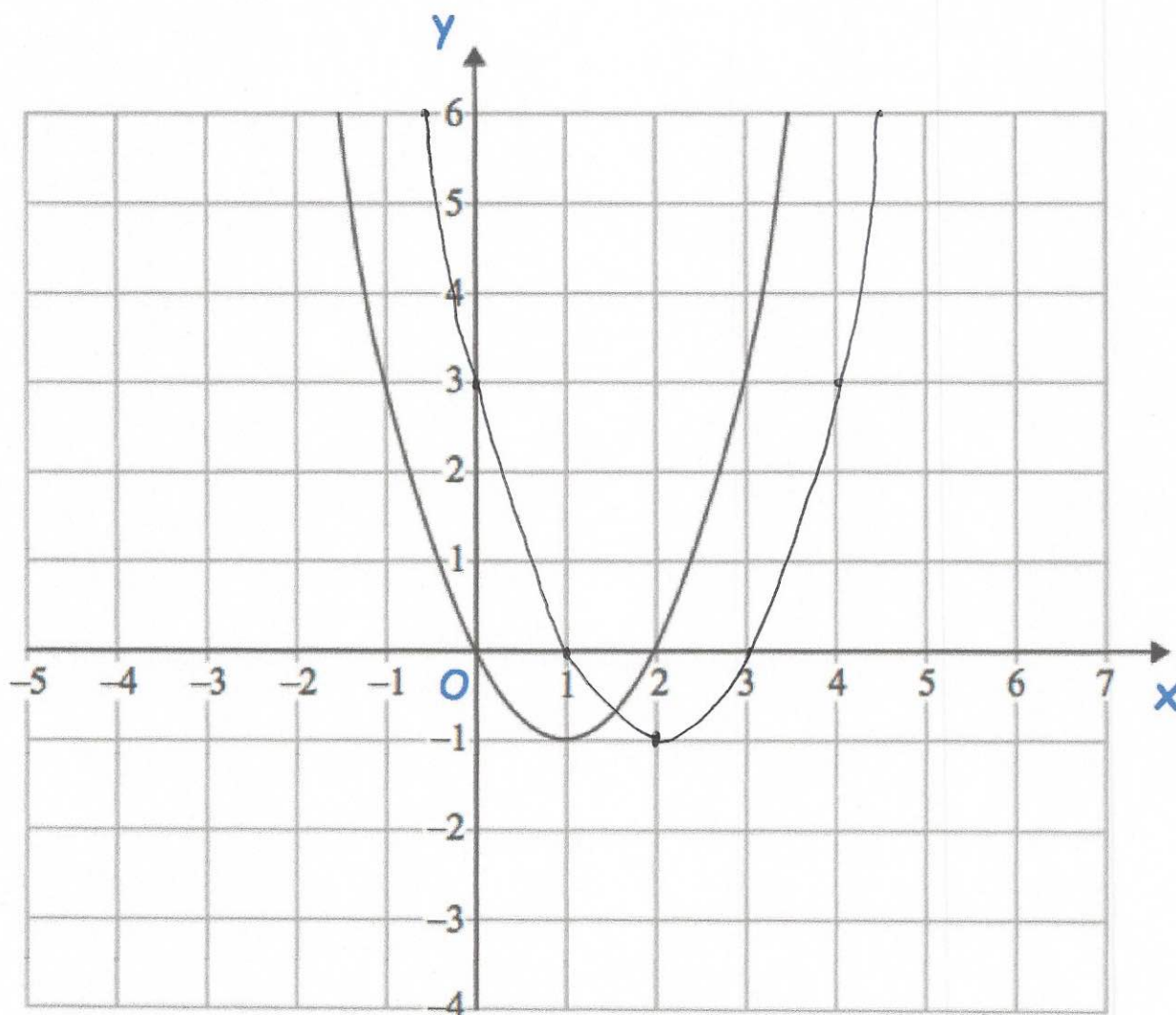
(a) $y = f(x) - 4$

(.....5..... , ...-2....)

(1)

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

(.....7..... , ...2.....)

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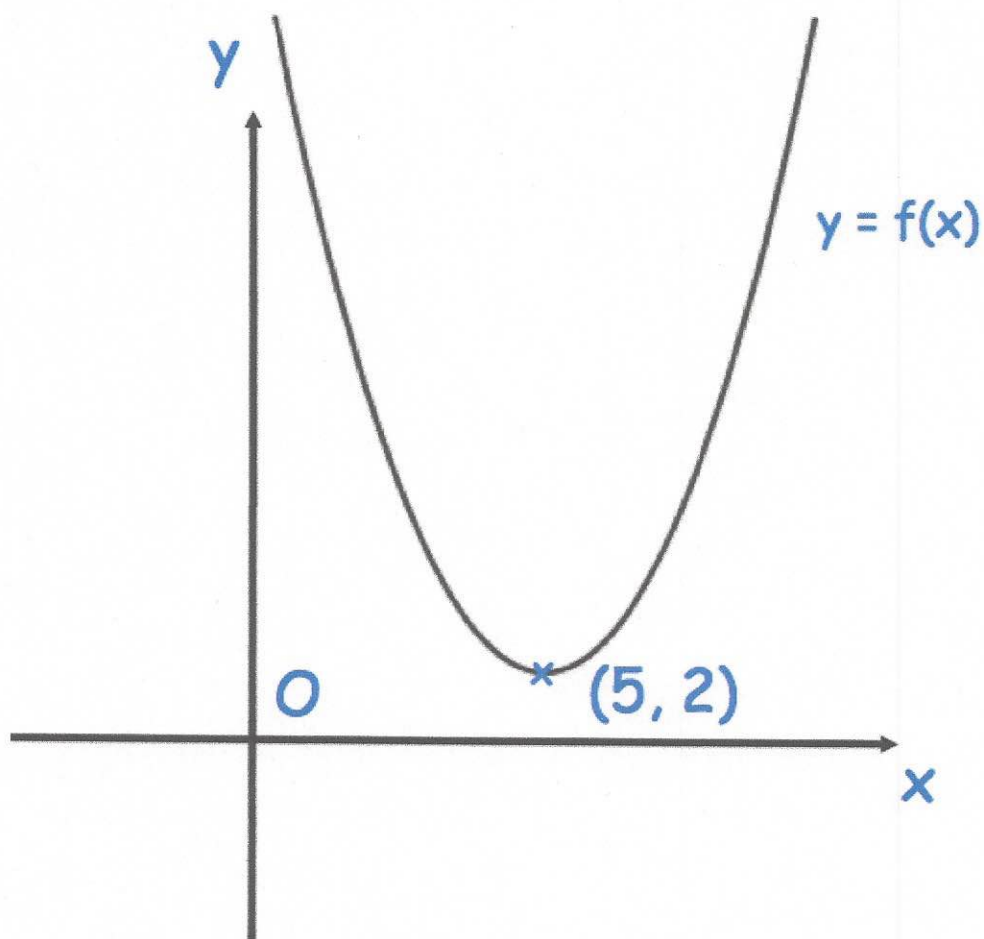
(c) $y = f(-x)$

(.....-5..... , ...2.....)

(1)

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

On the grid, sketch the graph of y = f(x – 1)

(2)

4. This is a sketch of the curve with the equation $y = f(x)$.
The only minimum point of the curve is at the point $(5, 2)$.

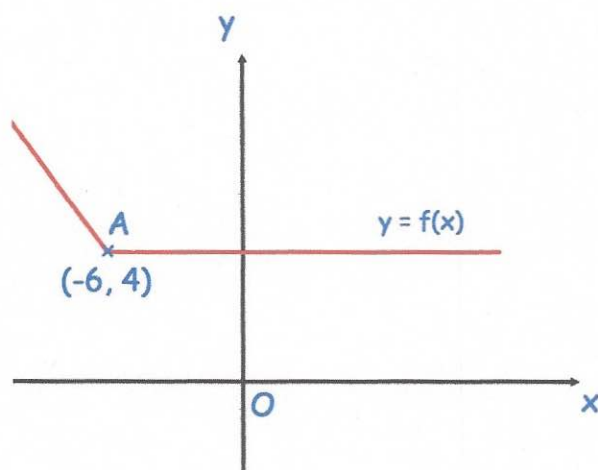Write down the coordinates of the minimum point of the curve with equation

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

(...5..., ...5...)

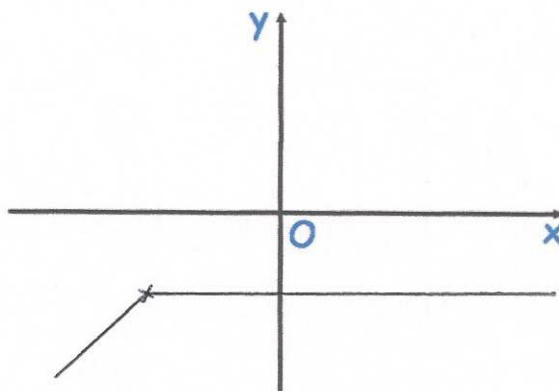(1)

(b) $y = f(x + 1) - 2$

(...4..., ...0...)

(2)

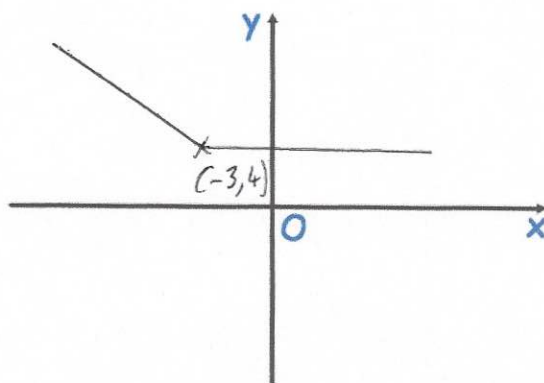5.   The diagram below shows the graph of $y = f(x)$

The point A(−6, 4) lies on the graph.

Sketch the graphs with the equations below, clearly giving the point corresponding to A.

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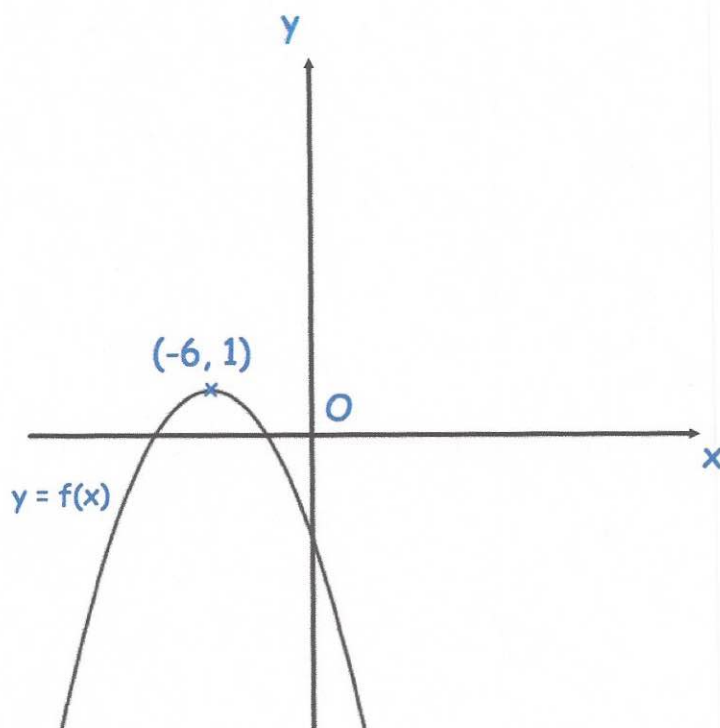

(2)

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

(−3, 4)

(2)

6.   This is a sketch of the curve with equation y = f(x)

The vertex of the curve is at the point (–6, 1)

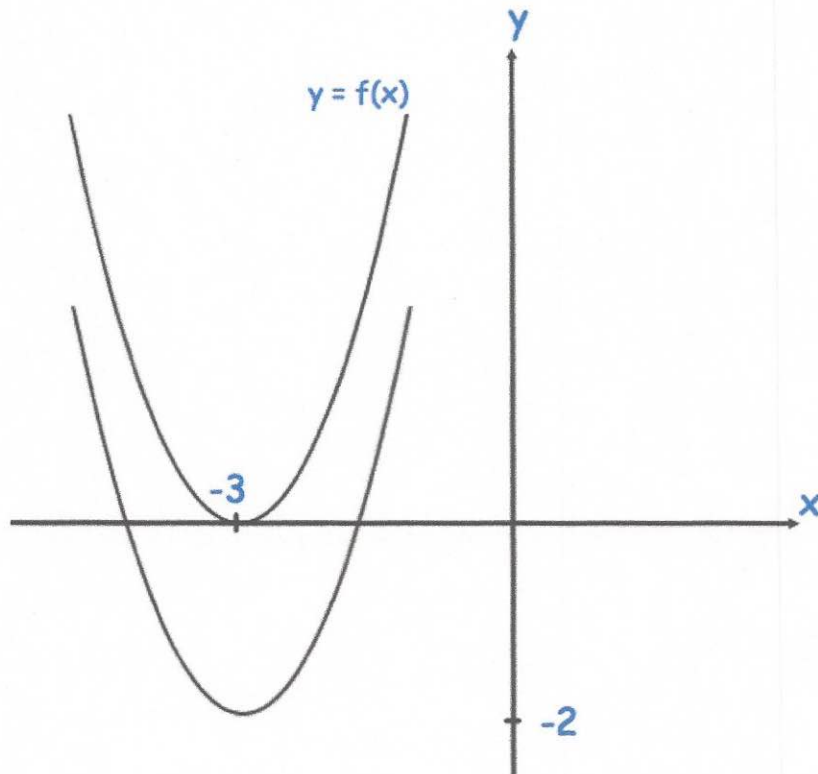Write down the coordinates of the vertex of the curve with equation

(a) y = f(x + 3)

(...–9..... , ...1.....)

(1)

(b) y = f(–x)

(......6....... , ...1......)

(1)

(c) y = f(x) – 4

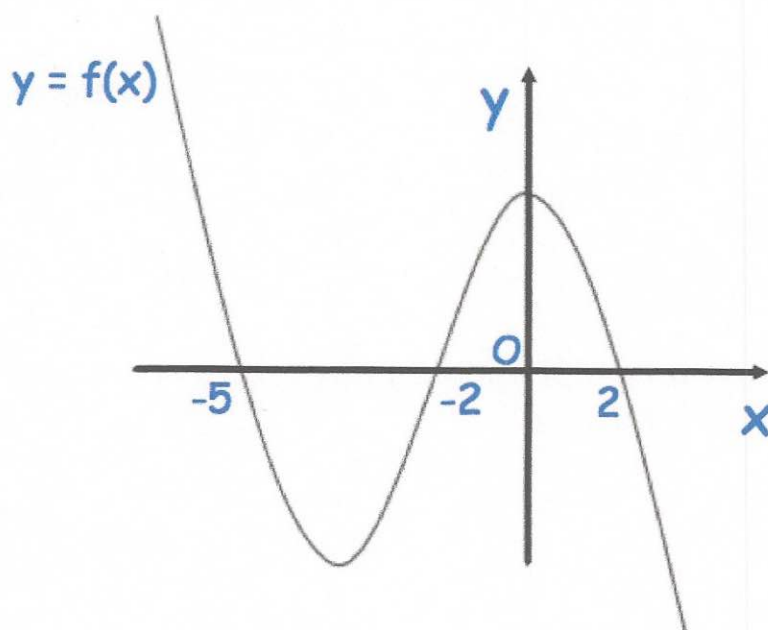(.....–6...... , ...–3.....)

(1)

7.

The curve with equation $y = f(x)$ is translated so that the point at $(-3, 0)$ is mapped onto the point $(-3, -2)$.

Find an equation of the translated curve.

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

(2)

8.

y = f(x)

The graph of y = f(x) cuts the x axis when x = −5, −2 and 2

Write down the coordinates of the points where these graphs cut the x axis.

(a) y = f(−x)
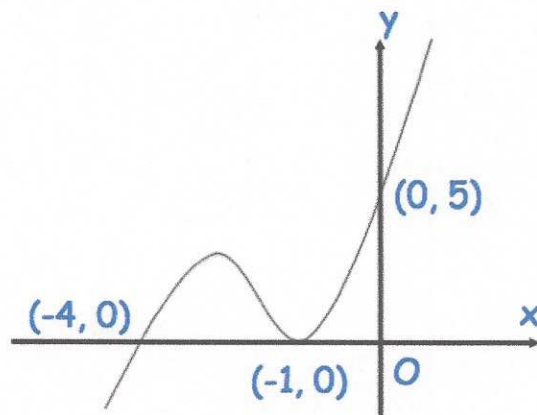
$(-2,0)$ $(2,0)$ $(5,0)$

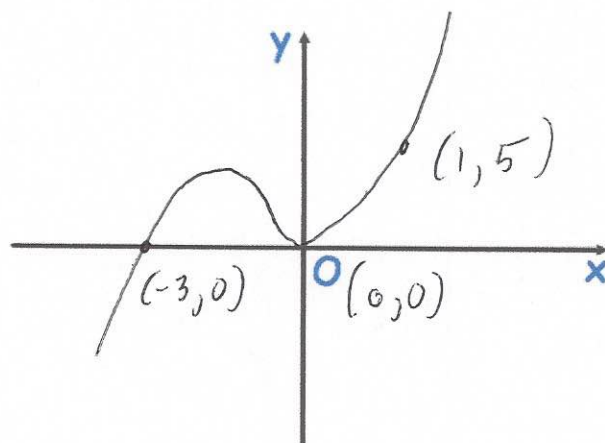**(2)**

(b) y = f(x + 2)

$(-7,0)$ $(-4,0)$ $(0,0)$

(2)

9. Shown below is the curve with equation $y = f(x)$.
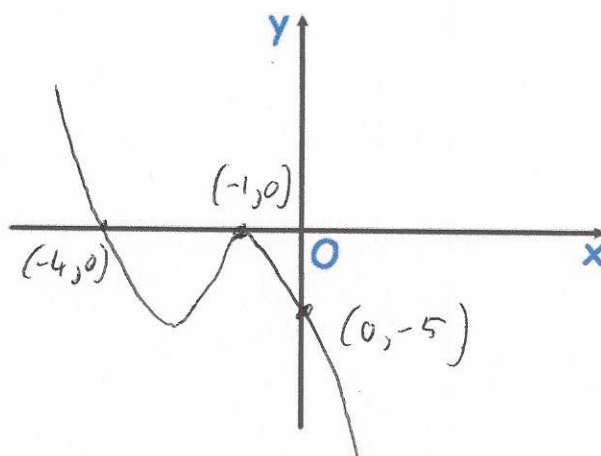   The curve passes through the points $(-4, 0)$, $(-1, 0)$ and $(0, 5)$

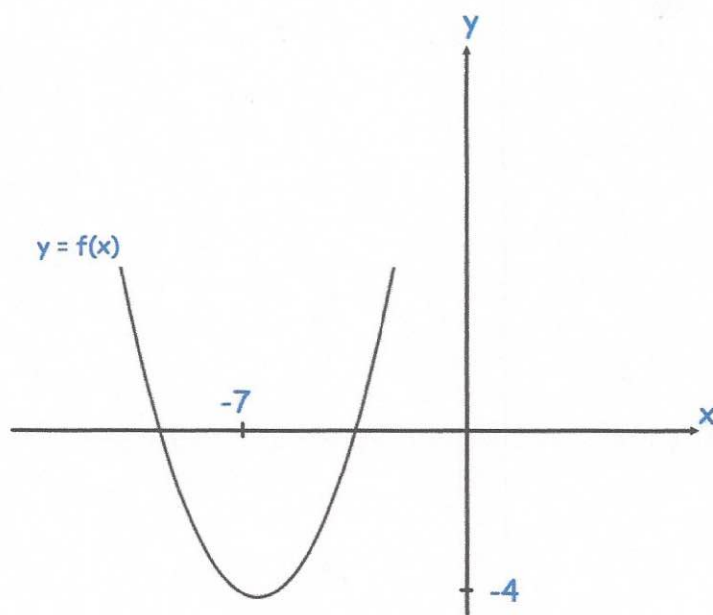   Sketch the curve with equation:

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

                                                                            (2)

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

                                                                            (2)

10. Shown below is a sketch of a curve with equation y = f(x).
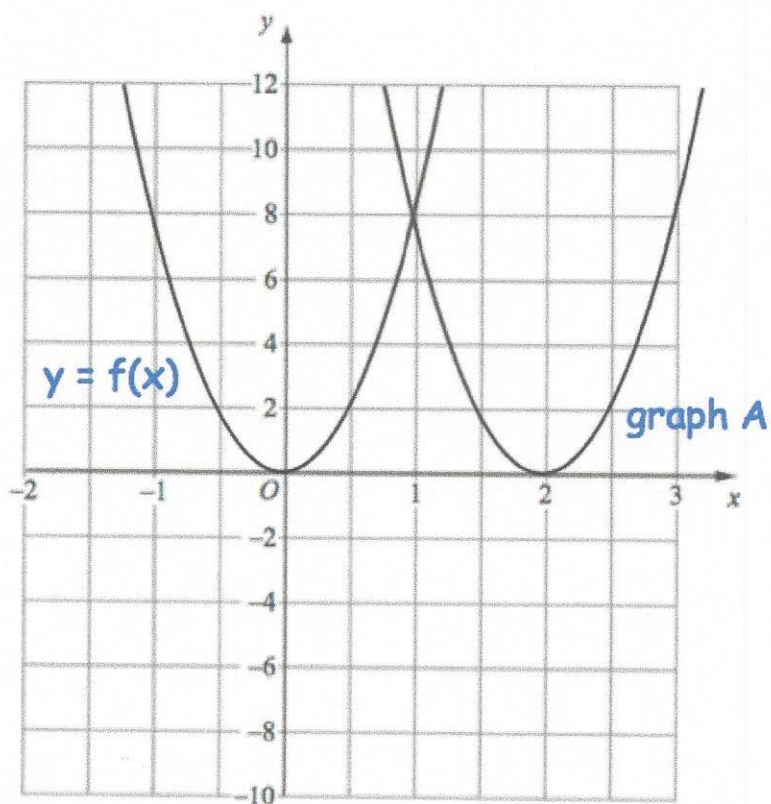The curve has a minimum point at (-7, -4).

The graph of y = f(x) + a has a minimum point at (−7, 0), where a is a constant.

Write down the value of a.

4

(1)

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

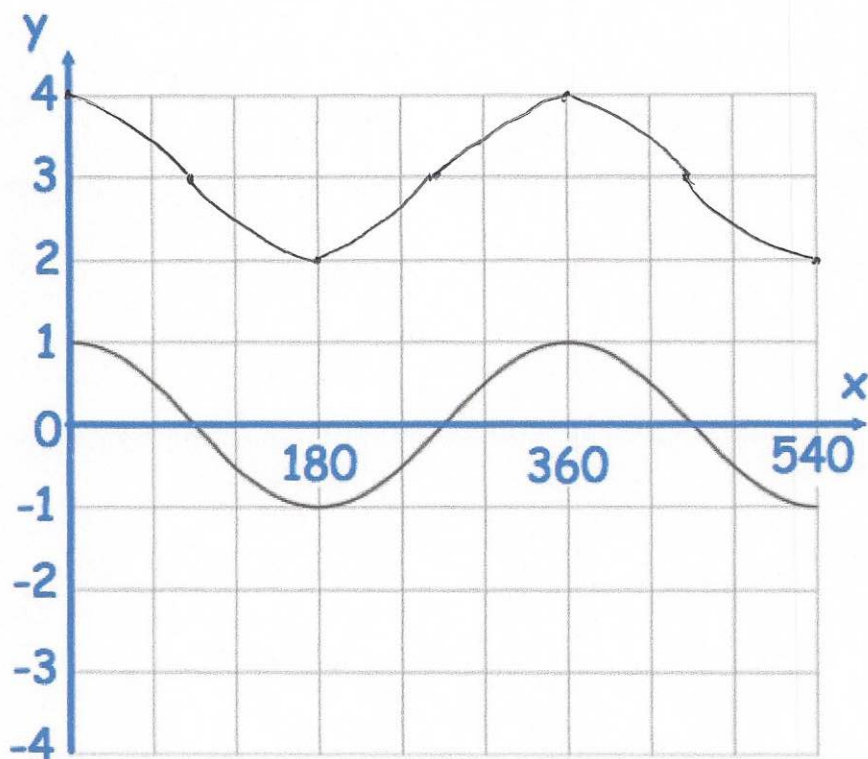The graph A is a translation of the graph y = f(x)

Write down the equation of graph A.
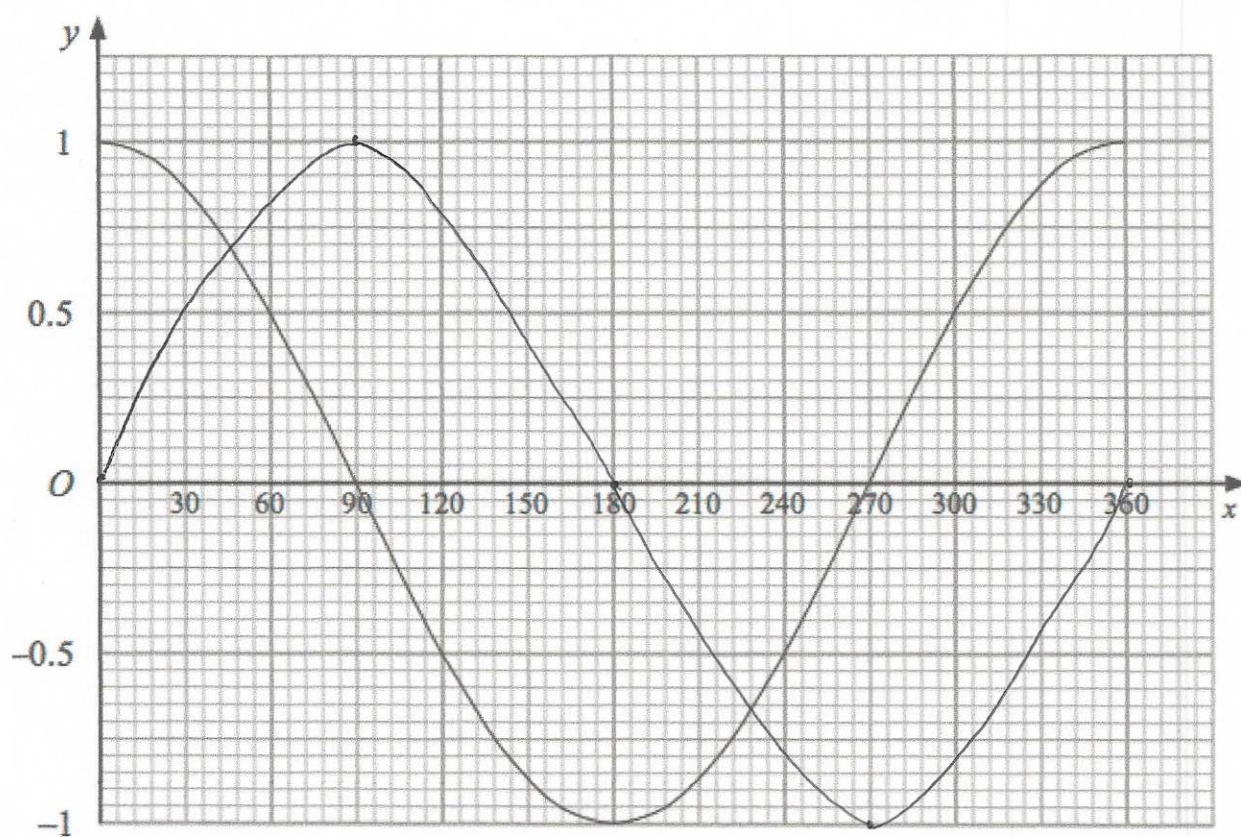
$$y = f(x - 2)$$

(2)

12. Shown below is the graph of $y = \cos x$

On the grid, sketch the graph of $y = 3 + \cos x$ for values of x from 0° to 540°

(2)

13. Shown below is the graph of y = cos x

On the grid, sketch the graph of y = cos(x − 90°) for values of x from 0° to 360°

(2)

14. Describe the transformation that maps the curve with equation $y = \sin(x)$ onto the curve with equation

(a) $y = -\sin(x)$

Reflection with mirror line of the x-axis

(2)

(b) $y = 1 + \sin(x)$
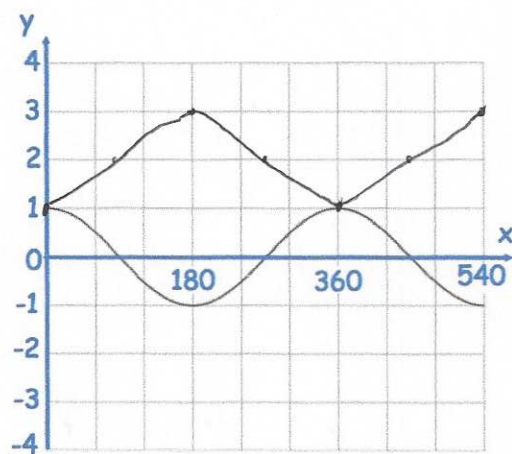
Translation by $\begin{pmatrix} 0 \\ 1 \end{pmatrix}$

(2)

(c) $y = \sin(x - 30°)$

Translation by $\begin{pmatrix} 30 \\ 0 \end{pmatrix}$

(2)

15. Shown below is the graph of $y = \cos x$

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

(2)