Name: SOLUTIONS

GCSE (1 - 9)

Transforming Graphs

Solutions by
Kenneth Stafford
MATHS TUTOR
ken@kennethstafford.co.uk

These questions are compiled from released Pearson Edexcel GCSE maths exam papers

They contain exam questions from up until the ***November 2023*** exam series

More recent exam papers do exist but are withheld for mock exams

As new exam papers are released these worksheets will gradually be updated

The **most current** version of these worksheets will always be available at: kennethstafford.co.uk

Past Papers:	**Similar Worksheets:**
Solutions:	**This worksheet:**

1

The equation of a curve is $y = a^x$
A is the point where the curve intersects the y-axis.

(a) State the coordinates of A.

$x = 0$ on y-axis

$y = a^0 = 1$

Anything to the power of zero is 1

(0 , 1)

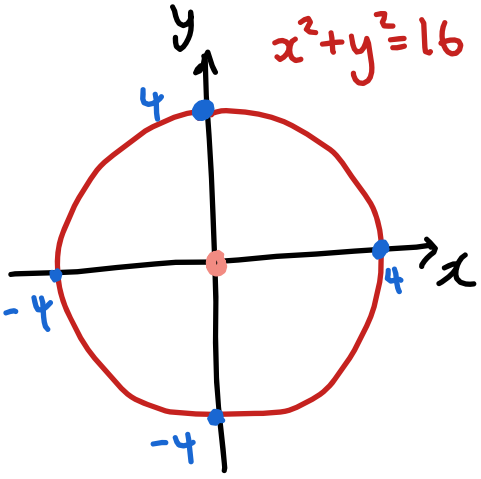
(1)

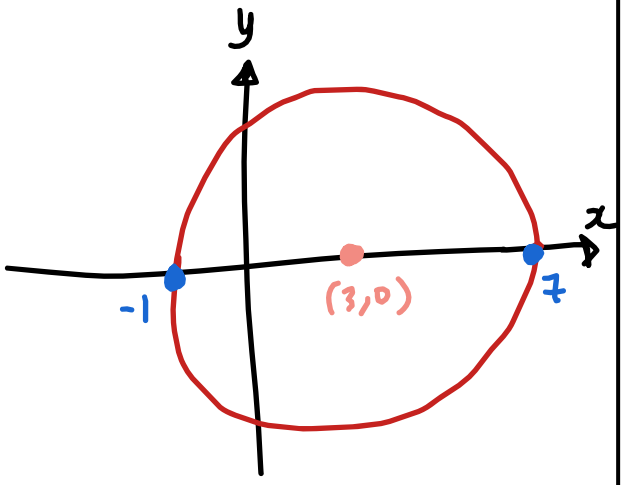
The equation of circle **C** is $x^2 + y^2 = 16$

The circle **C** is translated by the vector $\begin{pmatrix} 3 \\ 0 \end{pmatrix}$ to give circle **B**.

(b) Draw a sketch of circle **B**.

Label with coordinates
the centre of circle **B**
and any points of intersection with the x-axis.





$\begin{bmatrix} 3 \\ 0 \end{bmatrix}$

move 3 to the right

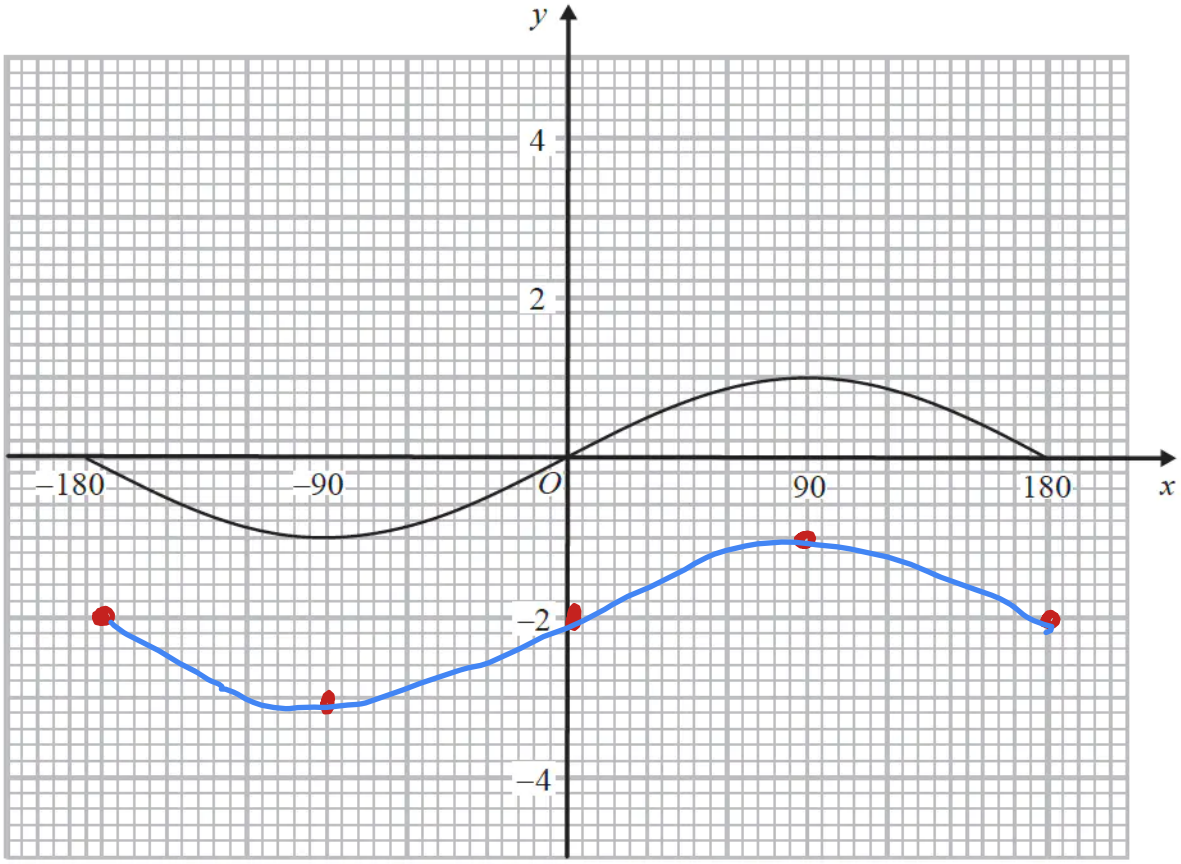
(3)

(Total for Question 20 is 4 marks)

[Edexcel, GCSE, Summer 2017, Paper 3H, Q20]

2

Here is the graph of $y = \sin x°$ for $-180 \leqslant x \leqslant 180$



On the grid, sketch the graph of $y = \sin x° - 2$ for $-180 \leqslant x \leqslant 180$

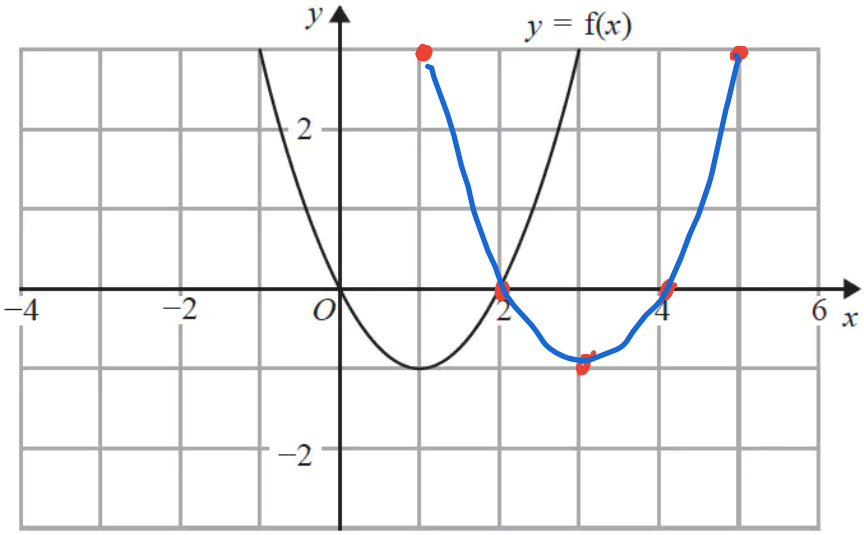
moves down 2

(Total for Question 18 is 2 marks)

[Edexcel, GCSE, Summer 2018, Paper 1H, Q18]

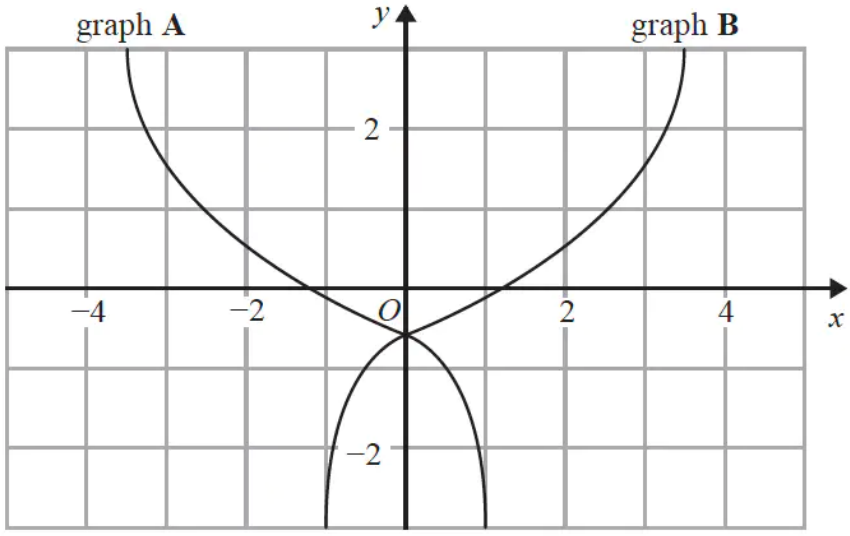
3

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



(a) On the grid above, sketch the graph of $y = f(x - 2)$ Move 2 to the right.

(1)



On the grid, graph **A** has been reflected to give graph **B**. All the x values have changed sign (+ -)

The equation of graph **A** is $y = g(x)$

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

$y = g(-x)$

(1)

(Total for Question 18 is 2 marks)

[Edexcel, GCSE, Autumn 2018, Paper 1H, Q18]

4

The graph of the curve C with equation $y = f(x)$ is transformed to give the graph of the curve S with equation $y = f(-x) - 3$

The point on C with coordinates $(7, 2)$ is mapped to the point Q on S.

Find the coordinates of Q.

$2 - 3 = -1$

$7 \times -1 = -7$

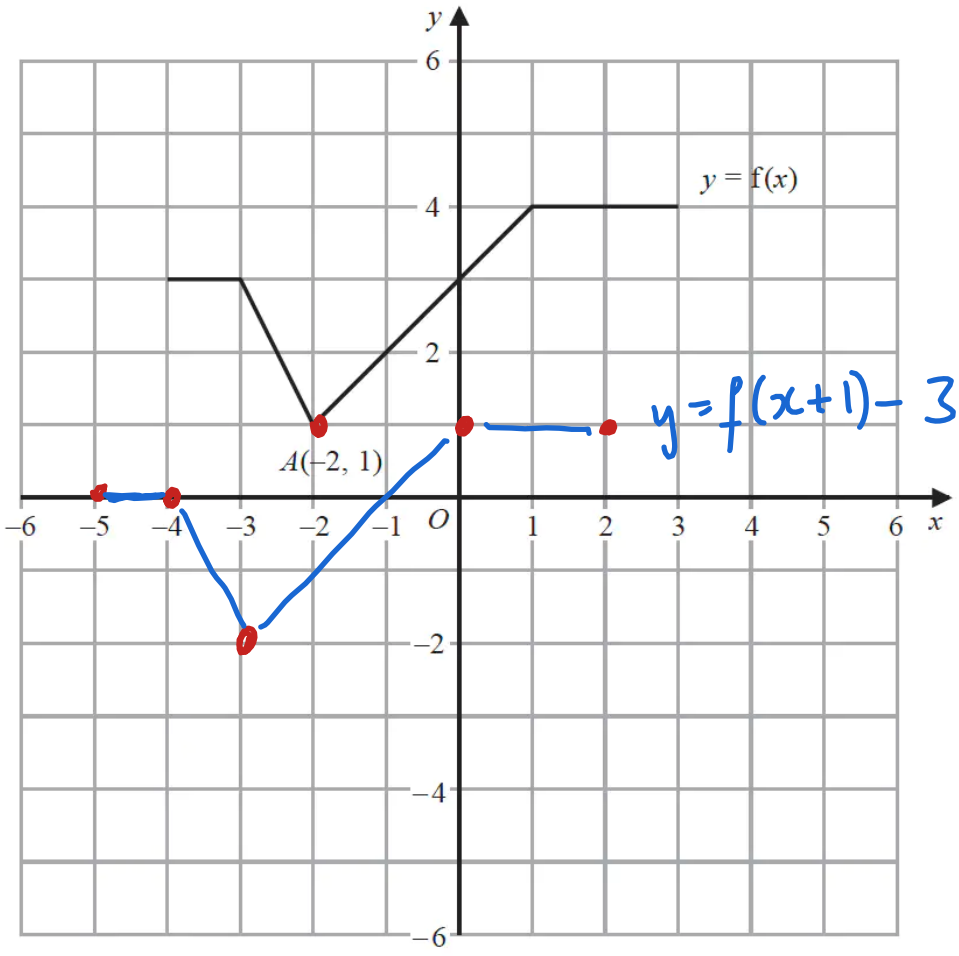
(-7 , -1)

(Total for Question 15 is 2 marks)

[Edexcel, GCSE, Summer 2019, Paper 3H, Q15]

5

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



(a) On the grid, draw the graph with equation $y = f(x + 1) - 3$

(2)

Point $A(-2, 1)$ lies on the graph of $y = f(x)$.

When the graph of $y = f(x)$ is transformed to the graph with equation $y = f(-x)$, point A is mapped to point B.

(b) Write down the coordinates of point B.

(2 , 1)

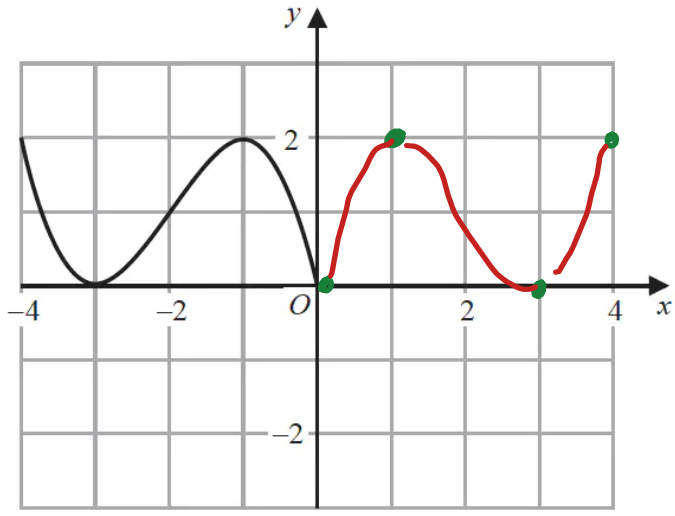
(1)

(Total for Question 20 is 3 marks)

[Edexcel, GCSE, Autumn 2019, Paper 1H, Q20]

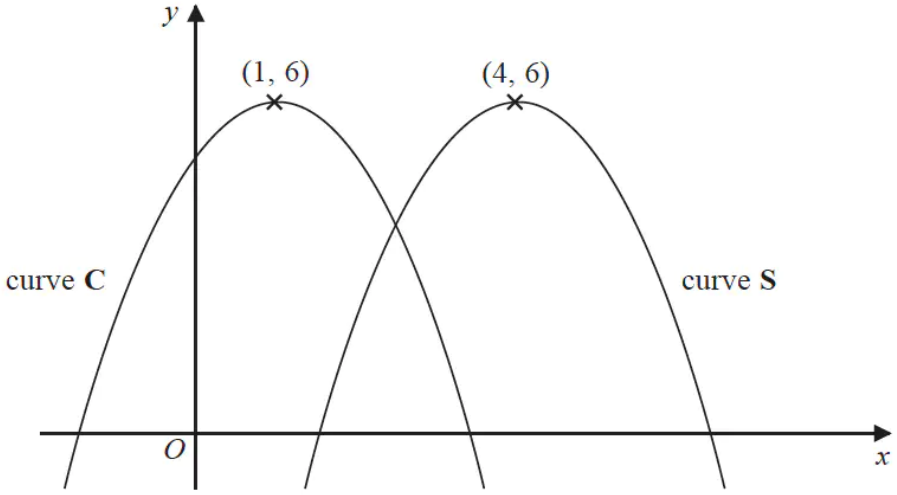
6

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



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

(2)



The curve **C** with equation $y = 5 + 2x - x^2$ is transformed by a translation to give the curve **S** such that the point (1, 6) on **C** is mapped to the point (4, 6) on **S**.

(b) Find an equation for **S**.

$y = 5 + 2(x-3) - (x-3)^2$

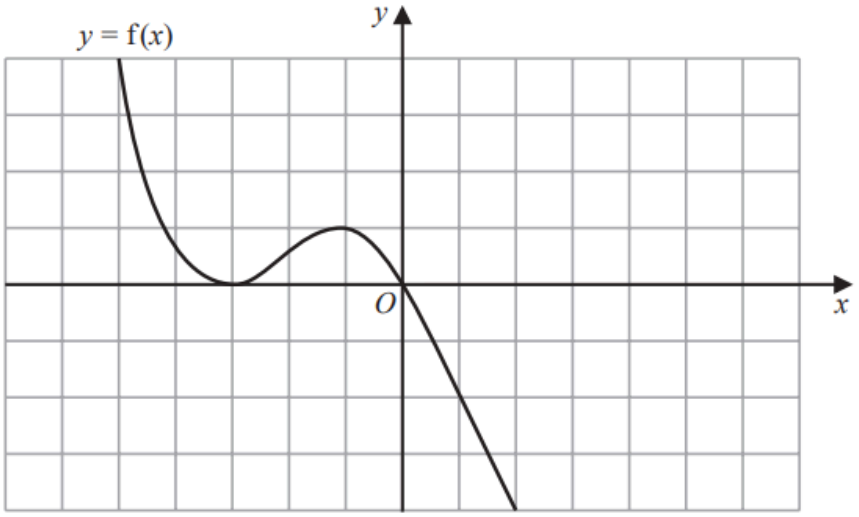
(2)

(Total for Question 21 is 4 marks)

[Edexcel, GCSE, Autumn 2020, Paper 2H, Q21]

7

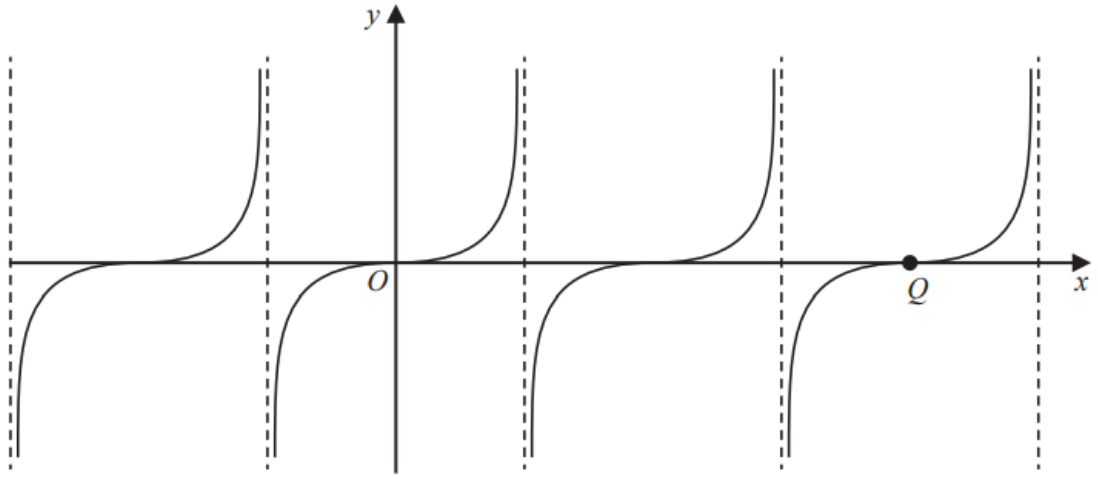
The graph of $y = f(x)$ is shown on the grid below.



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

(1)

Here is a sketch of the graph of $y = \tan x°$



The graph of $y = \tan x°$ is translated to give the graph of $y = g(x)$

Following the translation the point Q, shown on the graph above, moves to point R.
Point R has coordinates $(90, -5)$

(b) Find an expression for $g(x)$ in terms of x.

.....

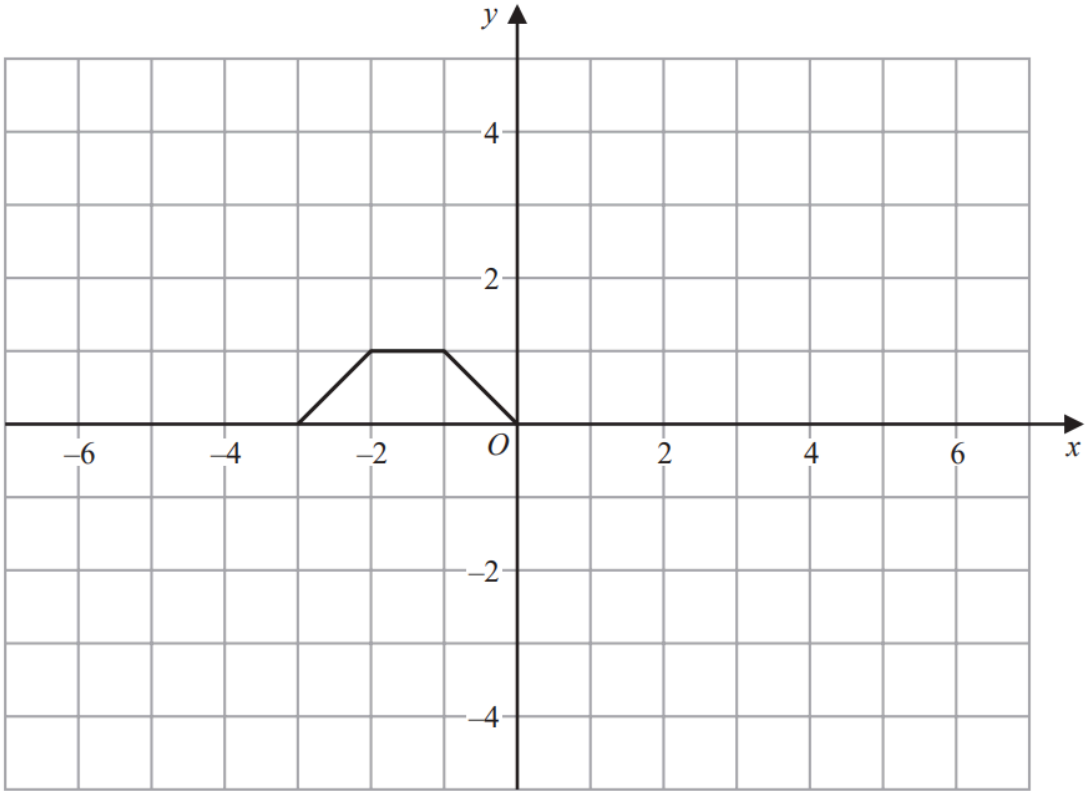
(2)

(Total for Question 21 is 3 marks)

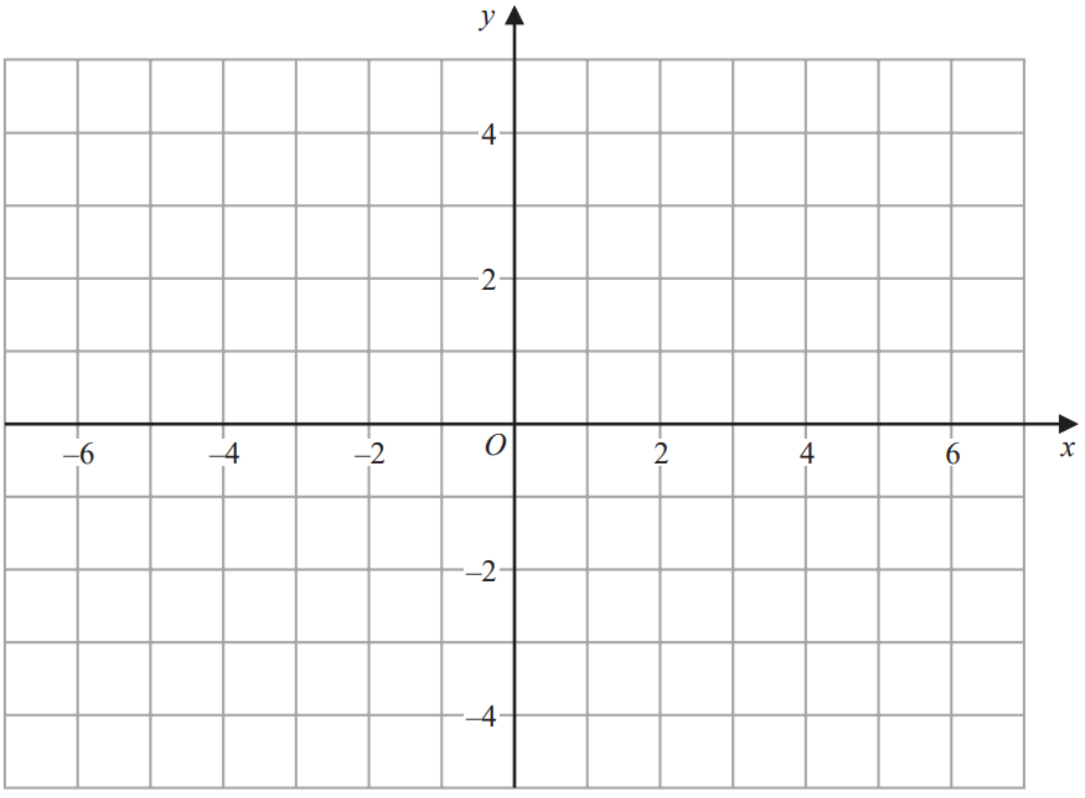
[Edexcel, GCSE, Summer 2022, Paper 2H, Q21]

8

Here is the graph of $y = f(x)$

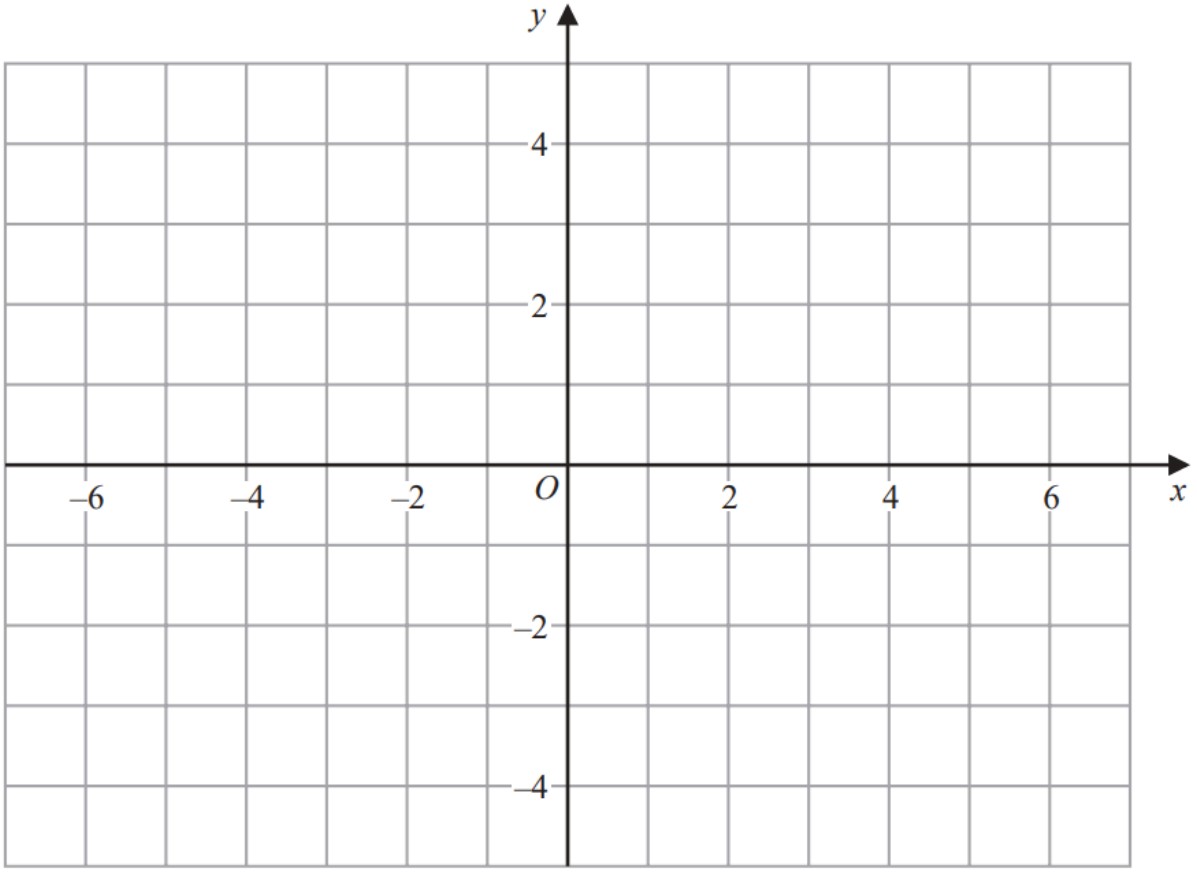


(a) On the grid below, draw the graph of $y = f(x) - 4$



(1)

(b) On the grid below, draw the graph of $y = f(-x)$



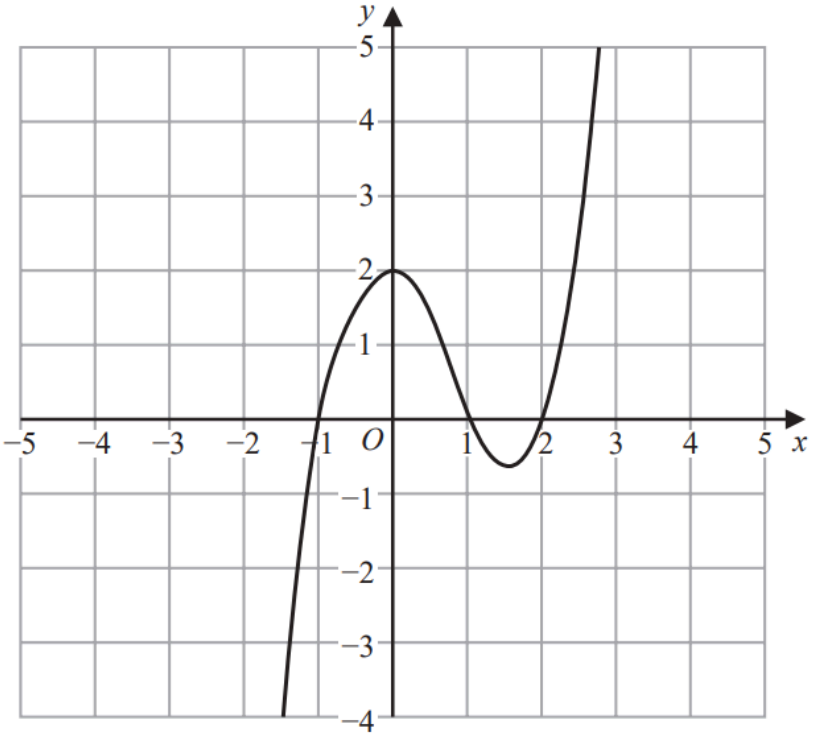
(1)

(Total for Question 21 is 2 marks)

[Edexcel, GCSE, Summer 2023, Paper 2H, Q21]

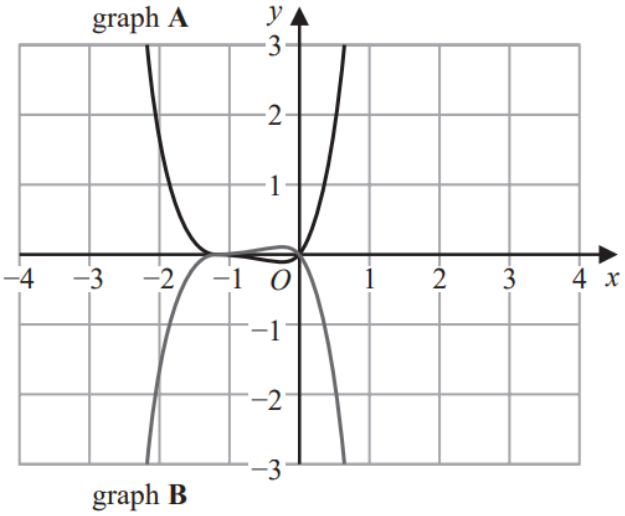
9

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



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

(1)



On this grid, graph **A** has been reflected to give graph **B**.
The equation of graph **A** is $y = g(x)$

(b) Write down an equation of graph **B**.

.....

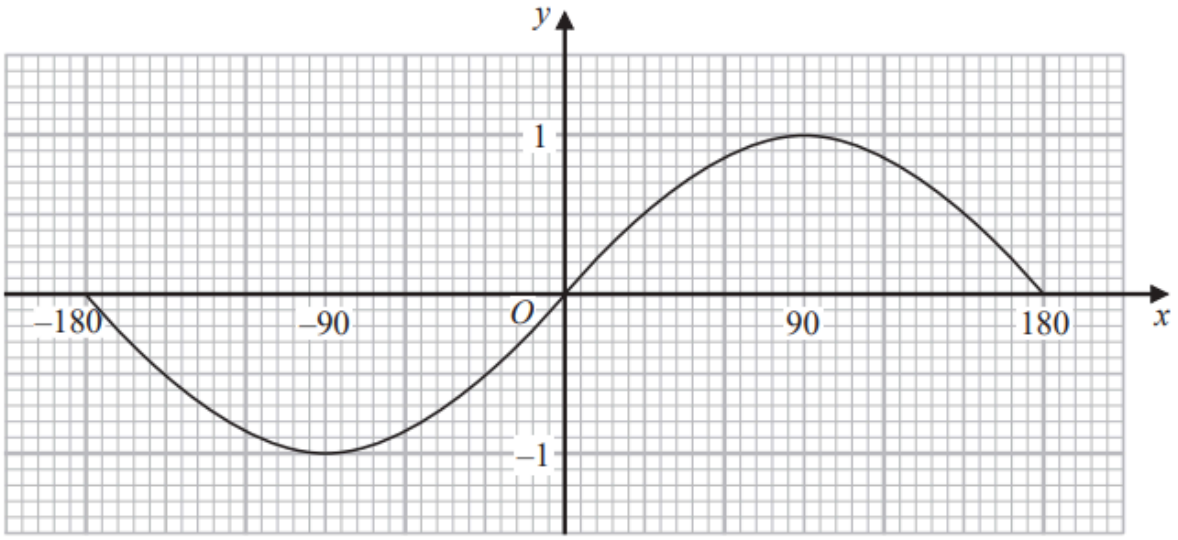
(1)

(Total for Question 23 is 2 marks)

[Edexcel, GCSE, November 2022, Paper 3H, Q23]

10

Here is the graph of $y = \sin x°$ for $-180 \leqslant x \leqslant 180$



(a) Use the graph to find estimates for the solutions of

$$\sin x° = 0.3 \quad \text{for } -180 \leqslant x \leqslant 180$$

.....

(2)

(b) Write down a value of x such that

$$\sin(x + 20)° = 0 \quad \text{for } -180 \leqslant x \leqslant 180$$

$x =$ .....

(1)

(Total for Question 19 is 3 marks)

[Edexcel, GCSE, November 2023, Paper 1H, Q19]

11

The turning point on the graph of $y = g(x)$ has coordinates $(-3, 6)$

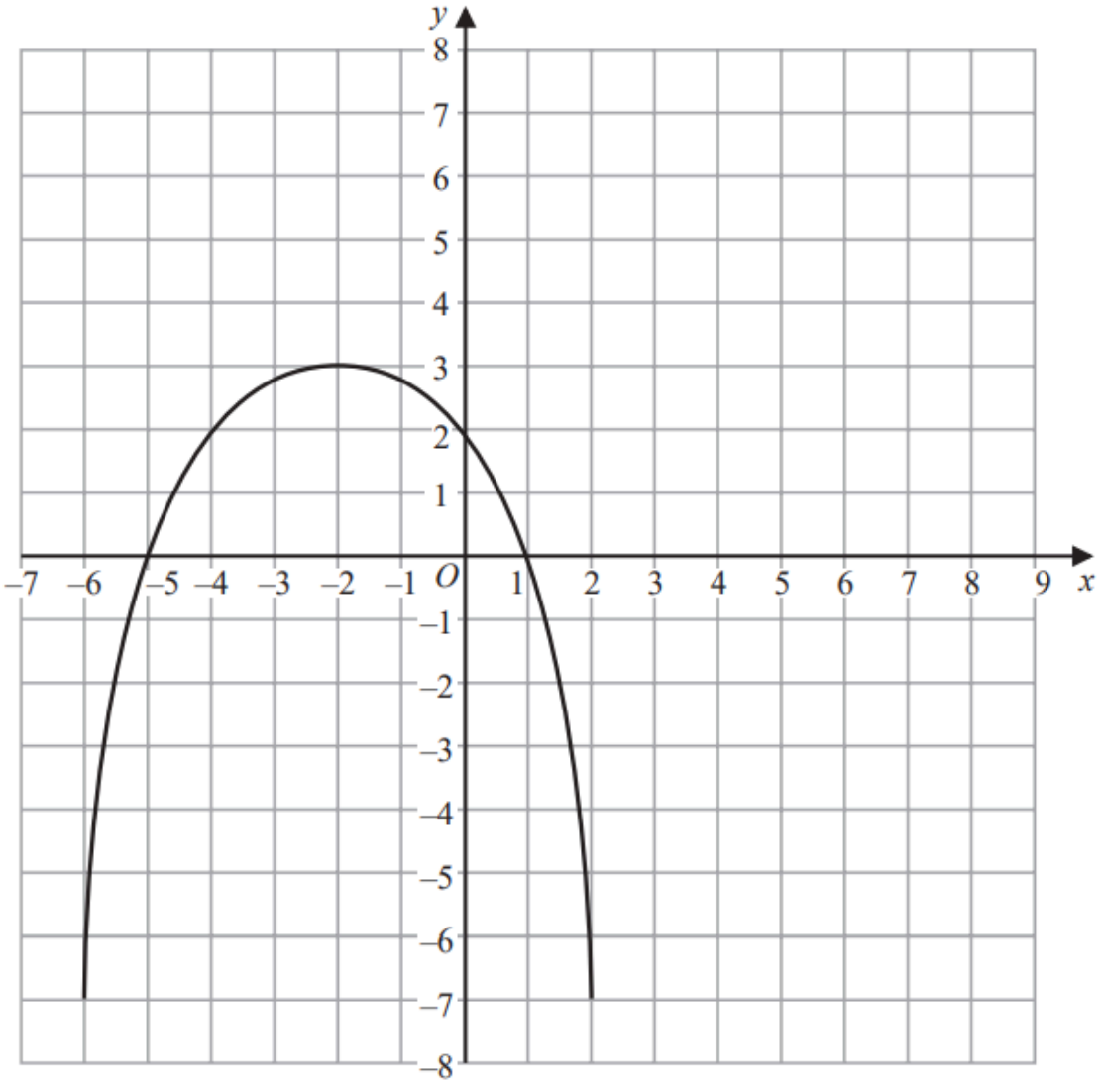
(a) Write down the coordinates of the turning point on the graph of $y = g(x - 7)$

(..... , ...)

(1)

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

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



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

(2)

(Total for Question 20 is 3 marks)

[Edexcel, GCSE, November 2023, Paper 3H, Q20]