15 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.

KZ15A

(..... , ...)

(Total for Question 15 is 2 marks)

16 Here are the first six terms of a quadratic sequence.

−1 5 15 29 47 69

Find an expression, in terms of n, for the nth term of this sequence.

KZ16A

.....

(Total for Question 16 is 3 marks)

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19 The functions g and h are such that

$$g(x) = \sqrt[3]{2x - 5} \qquad h(x) = \frac{1}{x}$$

PE19A

(a) Find g(16)

.....

(1)

(b) Find $hg^{-1}(x)$
Give your answer in terms of x in its simplest form.

$hg^{-1}(x) =$ .....

(3)

(Total for Question 19 is 4 marks)

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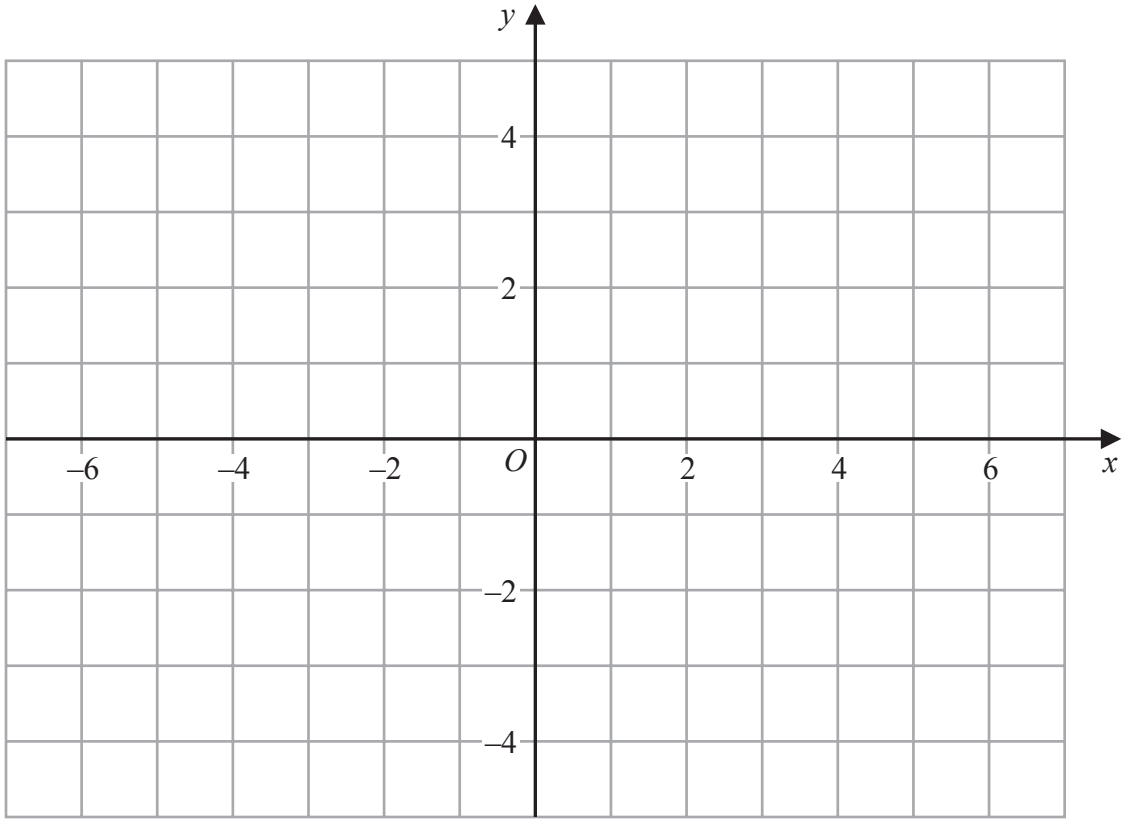
(b) On the grid below, draw the graph of $y = f(-x)$



(1)

(Total for Question 21 is 2 marks)

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22 $f(x) = \sqrt[3]{x}$
$g(x) = 2x + 3$

$h(x) = fg(x)$

Find $h^{-1}(x)$

PH22A

$h^{-1}(x) =$ .....

(Total for Question 22 is 3 marks)

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19 The functions f and g are such that

$$f(x) = (2x + 3)^2 \quad \text{and} \quad g(x) = 2x - 1$$

PP19A

(a) Find $gf(-3)$

.....

(2)

(b) Find $g^{-1}(x)$

$g^{-1}(x) =$ .....

(2)

(Total for Question 19 is 4 marks)

11 f and g are functions such that

$$f(x) = \frac{2}{x^2} \qquad \text{and} \qquad g(x) = 4x^3$$

BI11A

(a) Find f(–5)

.....

(1)

(b) Find fg(1)

.....

(2)

(Total for Question 11 is 3 marks)

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20 For $x \geqslant 0$, the functions f and g are such that

$$f(x) = 3x + 4 \qquad g(x) = \frac{\sqrt{x} + 2}{5}$$

PK20A

(a) Find $g^{-1}(x)$

$g^{-1}(x) =$ .....

(2)

(b) Solve $gf(x) = 3$

$x =$ .....

(3)

(Total for Question 20 is 5 marks)

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21 The functions f and g are such that

$$f(x) = 3x - 1 \quad \text{and} \quad g(x) = x^2 + 4$$

KX21A

(a) Find $f^{-1}(x)$

$f^{-1}(x) =$ .....

(2)

Given that $fg(x) = 2gf(x)$,

(b) show that $15x^2 - 12x - 1 = 0$

(5)

(Total for Question 21 is 7 marks)

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19 For all values of x

$$f(x) = (x + 1)^2 \quad \text{and} \quad g(x) = 2(x$$

AP19A

(a) Show that $gf(x) = 2x(x + 2)$

(2)

(b) Find g (7)

(2)

(Total for Question 19 is 4 marks)

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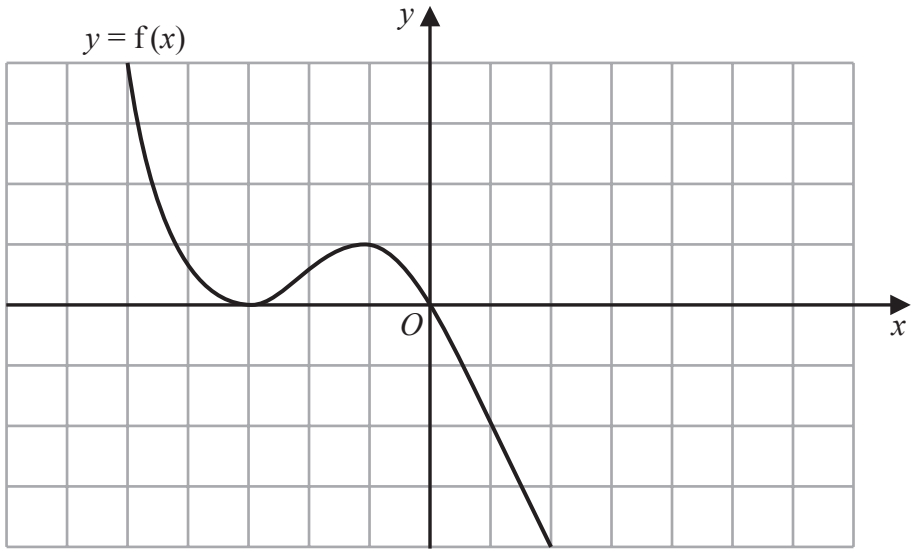
PE21A

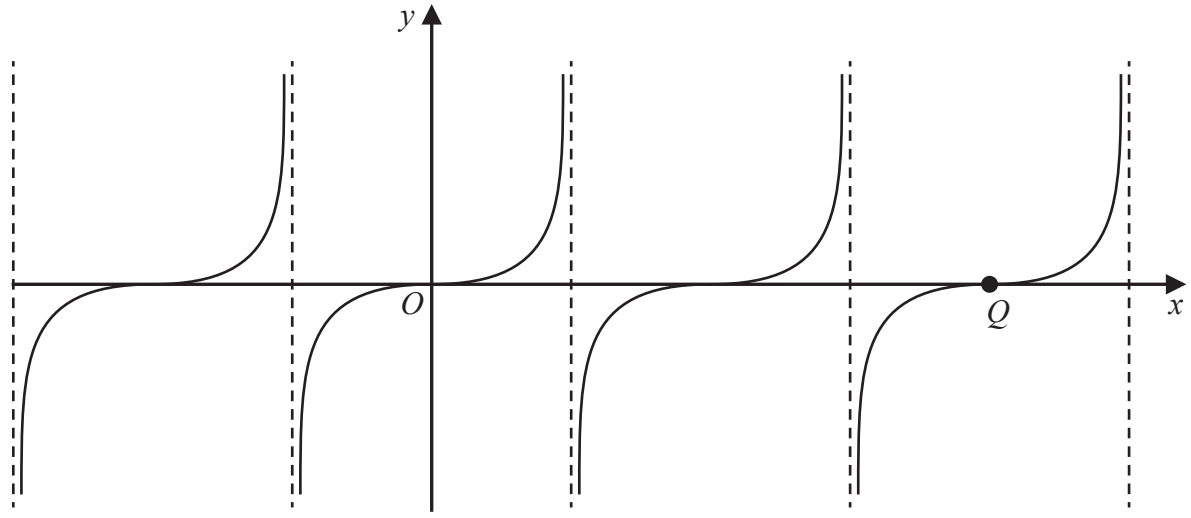
21 The graph of $y = f(x)$ is shown on the grid below.



(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)

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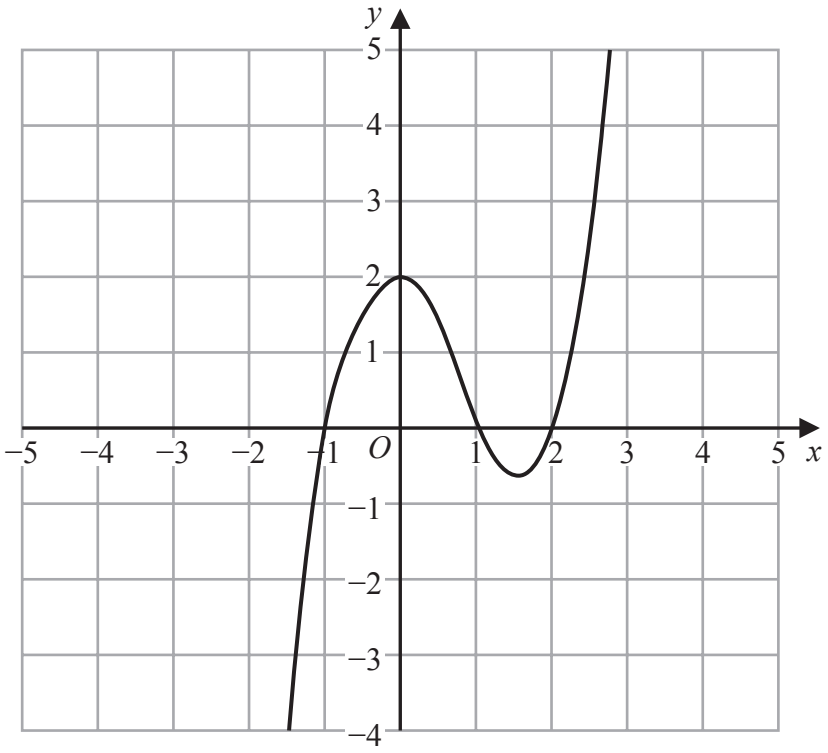
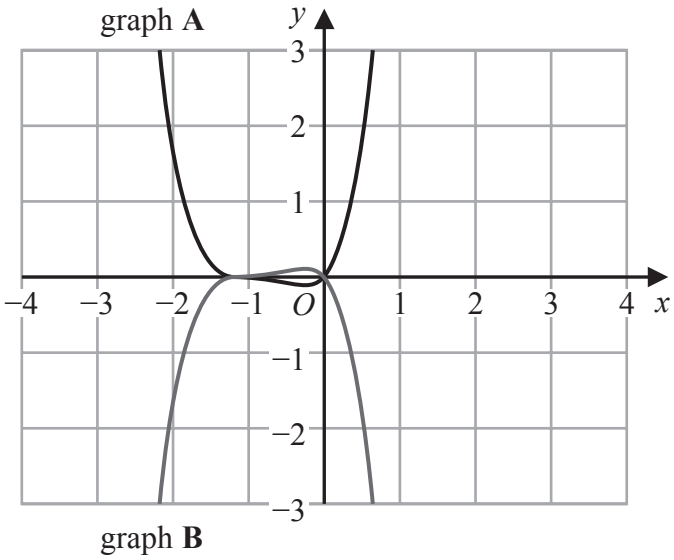
PJ23A

23 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)

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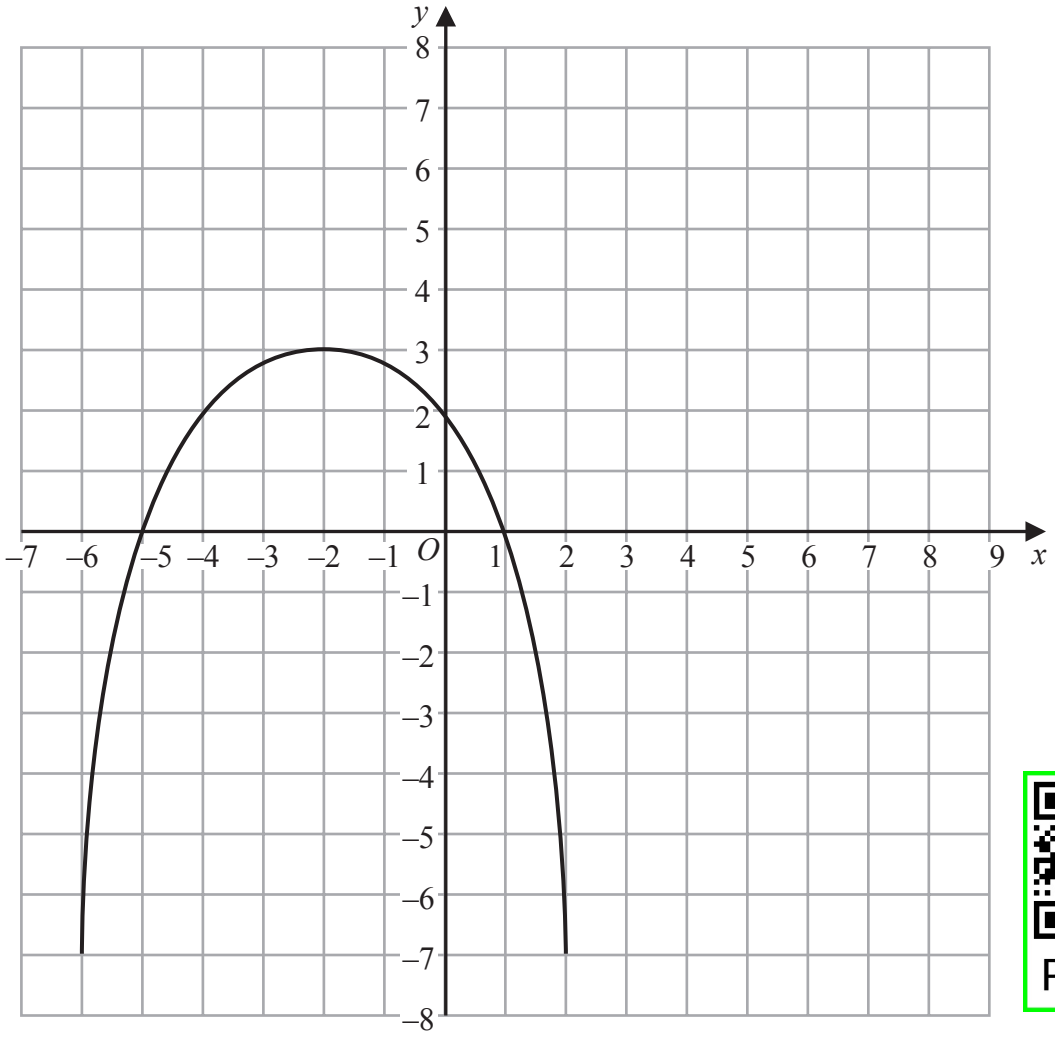
20 The turning point on the graph of $y = g(x)$ has coordinates $(-3, 6)$

(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.



PQ20A

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

(2)

(Total for Question 20 is 3 marks)

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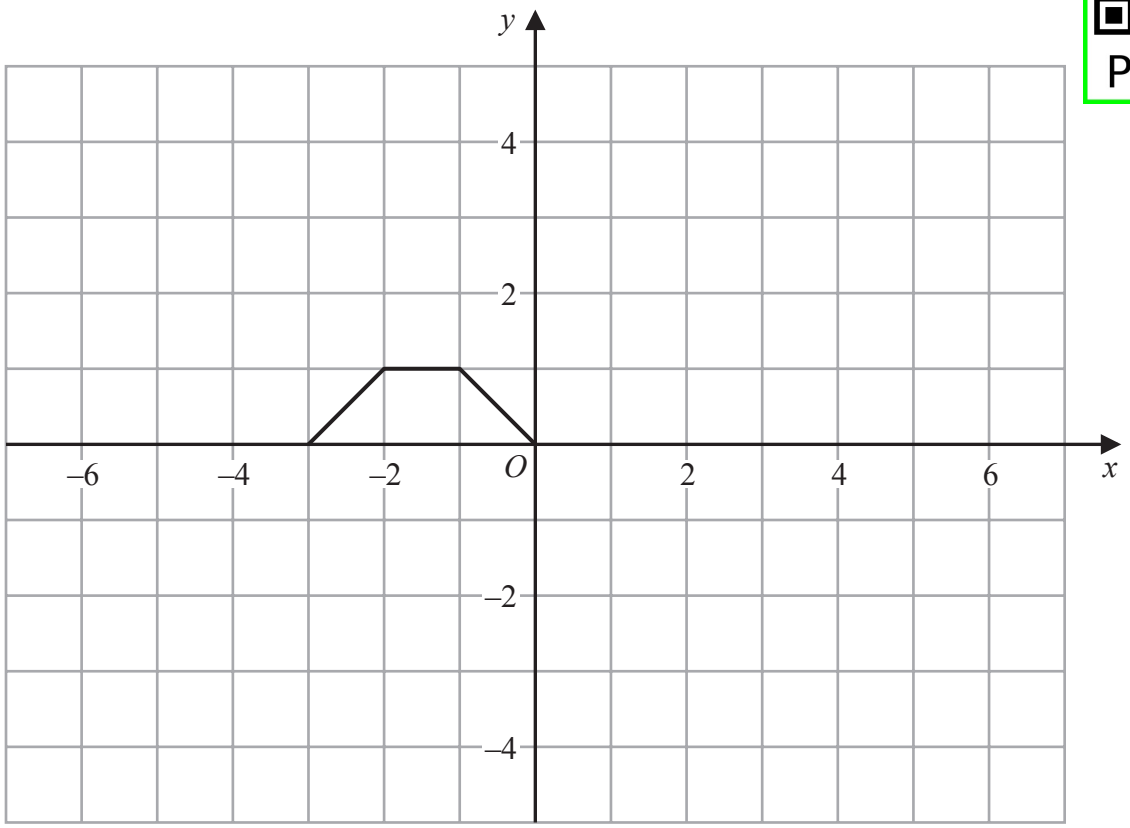
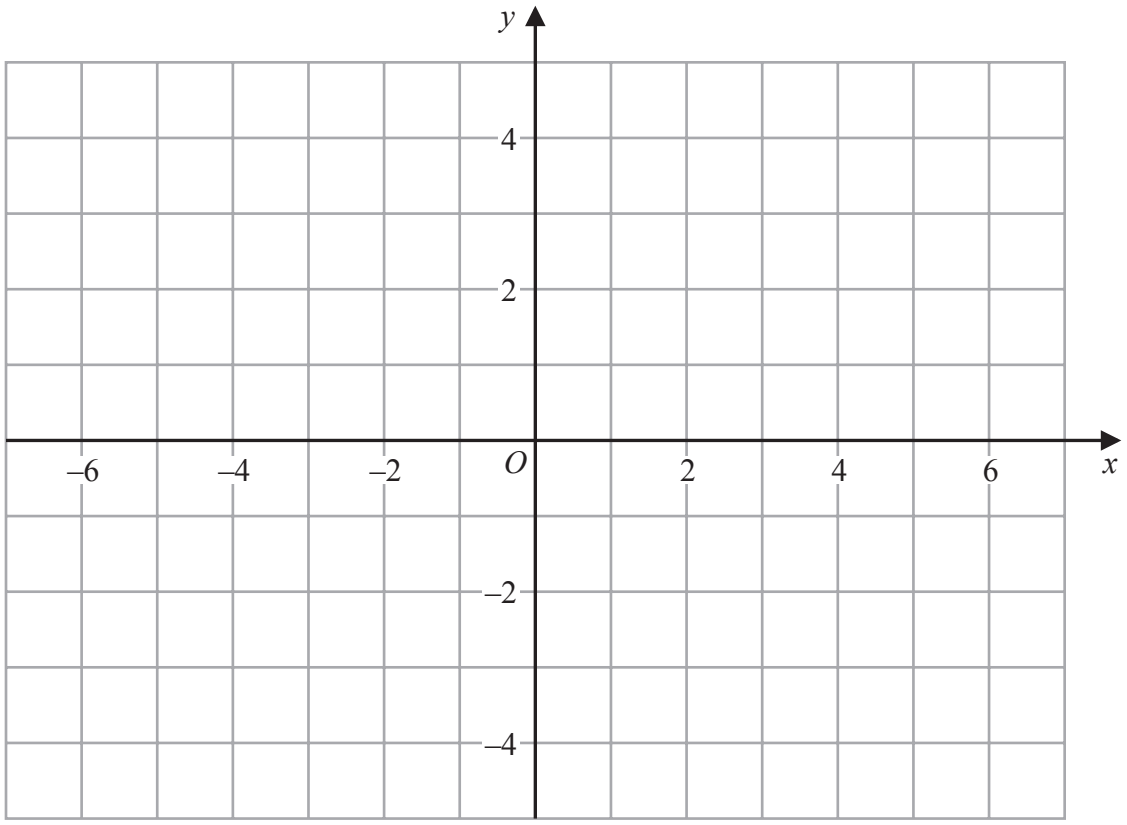
PL21A

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



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



(1)

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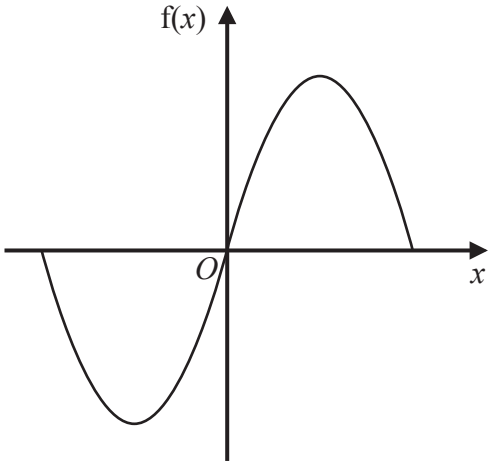
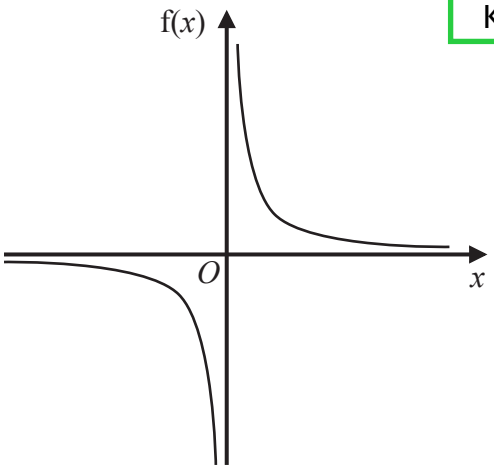
17 Here are four graphs.

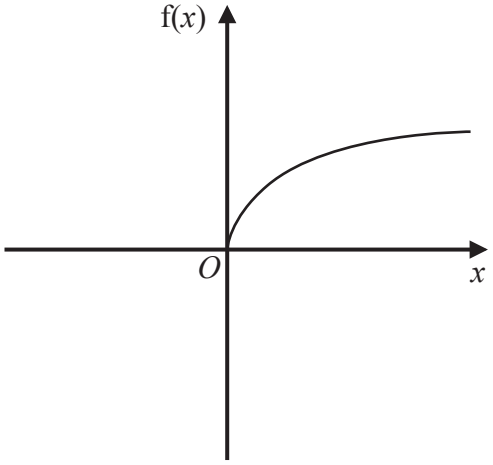
Graph A



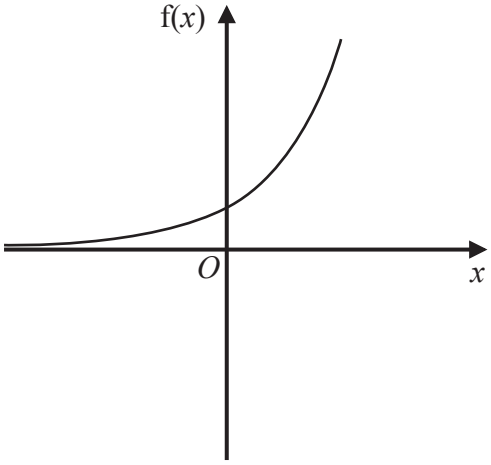
Graph B



Graph C



Graph D



The graphs represent four different types of function f.

Match each description of the function in the table to the letter of its graph.

Description of function	Graph
f(x) is inversely proportional to x	
f(x) is a trigonometrical function	
f(x) is an exponential function	
f(x) is directly proportional to $\sqrt{x}$	

(Total for Question 17 is 2 marks)

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