ADA PINPOINT TOPIC PACKS

(1)Recognising graphs (8 Qns)
(2)Recognising cubic and quadratic graphs (1 Qns)
(3)Transformations of Functions (8 Qns)
(4)Transformations and Sketching (0 Qns)
(5)Transformations Harder (0 Qns)
(6)Reflecting and Translating Functions (3 Qns)

50_to_100_Percent_Pinpoint_AI_Pack

Time Allocation = 34mins , Max = 30 Marks

Calculated Grade Boundaries:

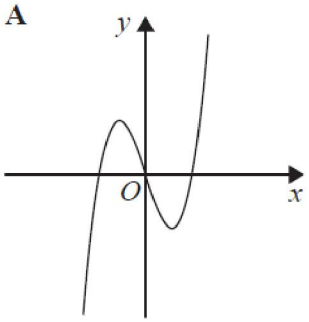
Grade	Marks
5-	2
5	4
5+	6
6-	8
6	10
6+	12
7-	14
7	16
7+	18
8-	20
8	22
8+	24
9-	26
9	28

9+	30

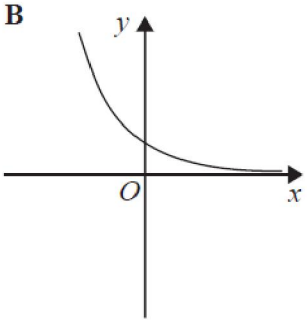
Question 1 (AO1): 43% of students got this right (2 marks)

9 Here are six graphs.

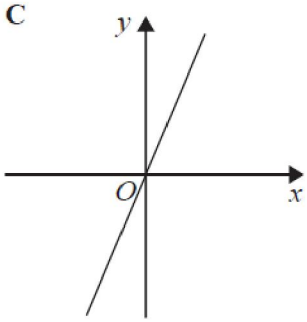
A



B



C



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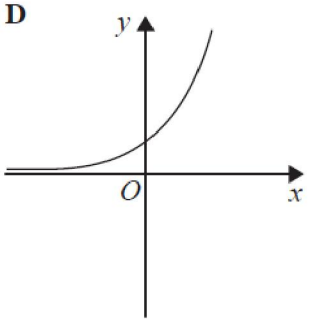
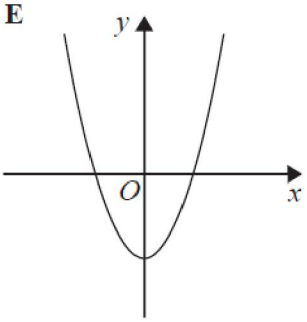
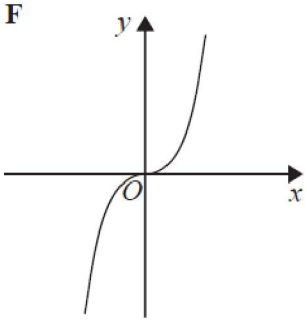


E



F



Write down the letter of the graph that could have the equation

(i) $y = 3^x$

.....

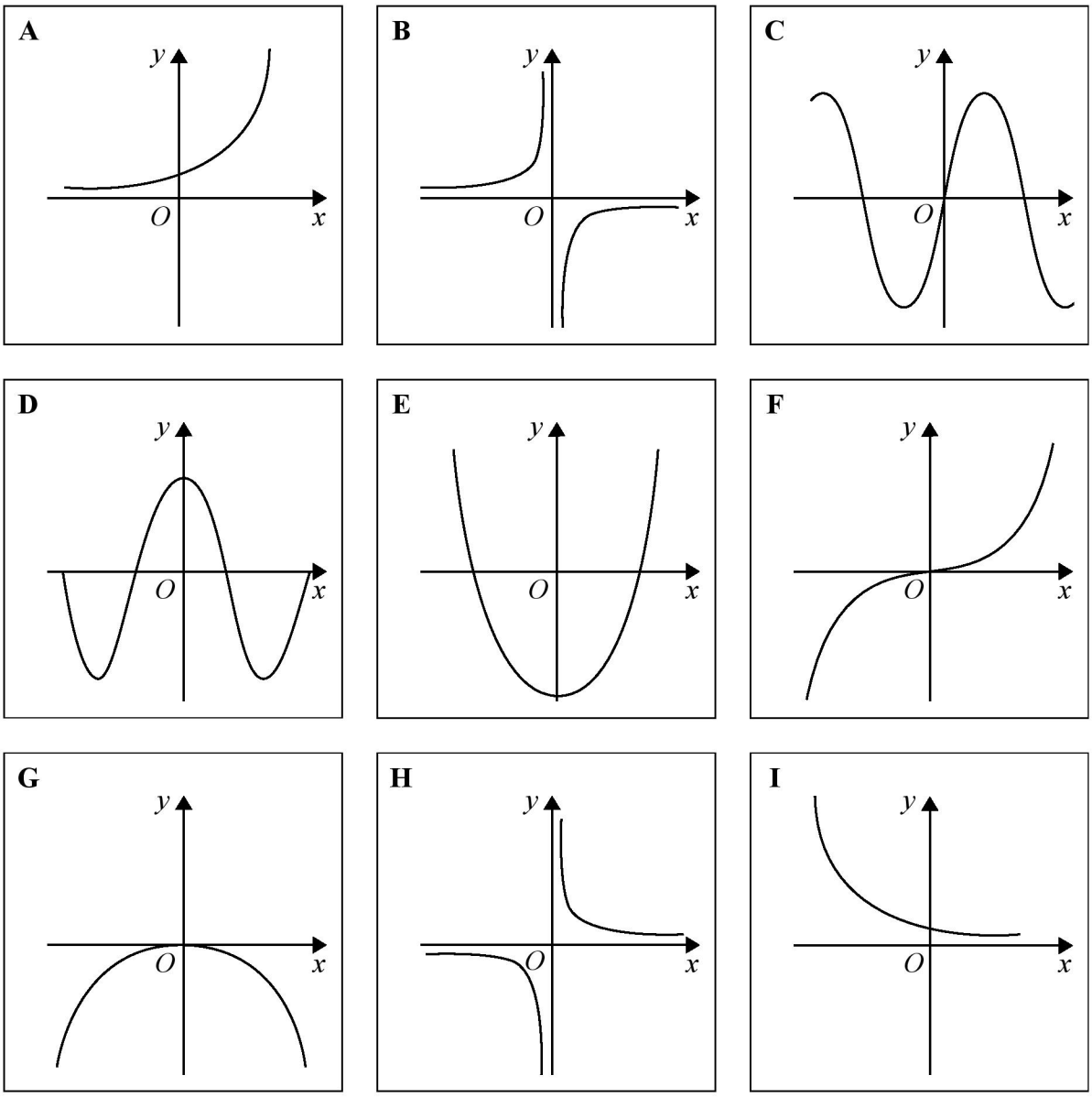
(ii) $y = x^2 - 4$

.....

(Total for Question 9 is 2 marks)

Question 2 (AO1): 37% of students got this right (3 marks)

14 Here are some graphs.



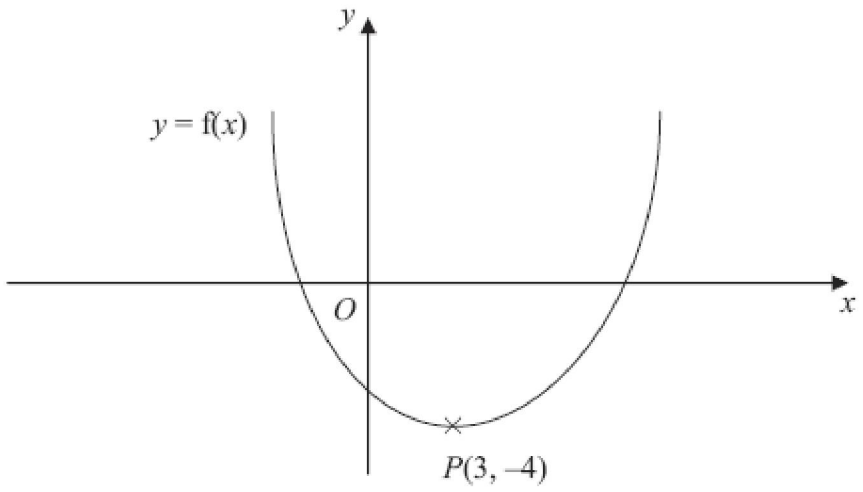
In the table below, match each equation with the letter of its graph.

Equation	Graph
$y = \sin x$	
$y = x^3 + 4x$	
$y = 2^x$	
$y = \frac{4}{x}$	

(Total for Question 14 is 3 marks)

Question 3 (AO1): (No Calc) 33% of students got this right (4 marks)

17. 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 $y = f(x + 5) + 6$

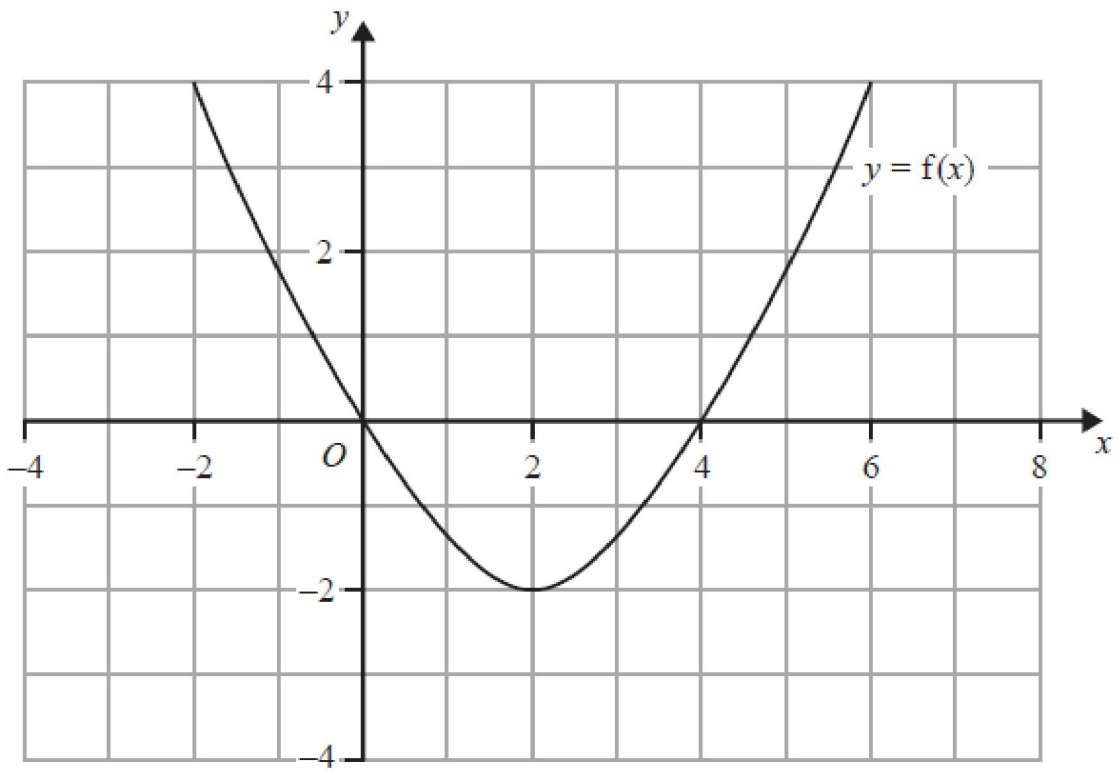
(..... , ...)

(2)

(Total 4 marks)

Question 4 (AO1): 33% of students got this right (4 marks)

18. The diagram shows part of the curve with equation $y = f(x)$.



(*a*) (i) Write down the coordinates of the points where the graph of $y = f(x - 2)$ crosses the x-axis.

(..... , ...) and (..... , ...)

(ii) Write down the coordinates of the point where the graph of $y = f(x - 2)$ crosses the y-axis.

(..... , ...)

(2)

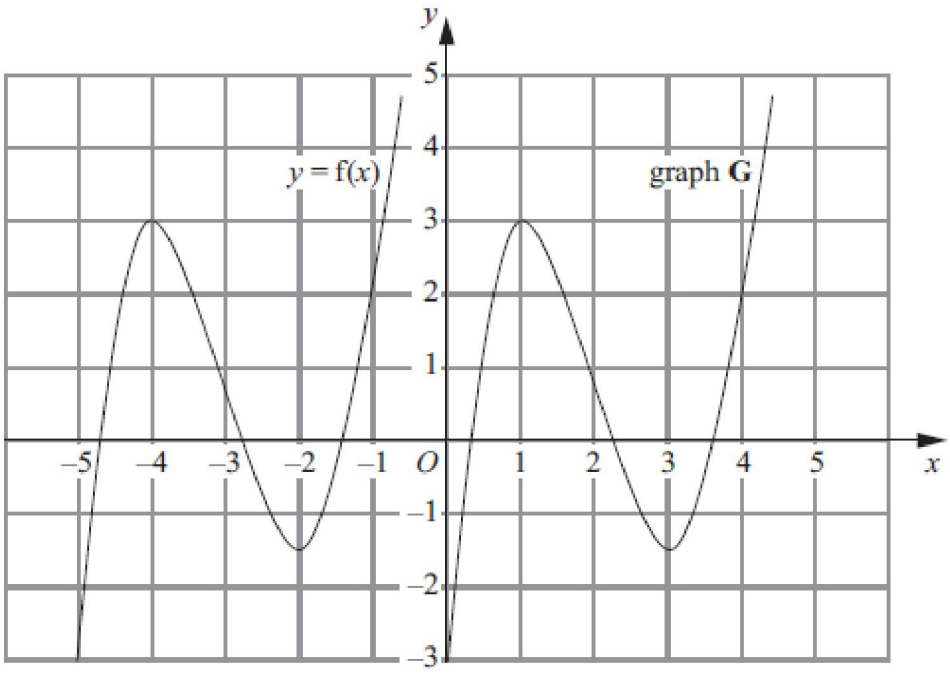
(*b*) On the diagram above, sketch the graph of $y = f(x) + 2$

(2)

(Total 4 marks)

Question 5 (AO1): 26% of students got this right (3 marks)

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



The graph **G** is a translation of the graph of $y = f(x)$.

(a) Write down, in terms of f, the equation of graph **G**.

$y =$ .....

(1)

The graph of $y = f(x)$ has a maximum point at $(-4, 3)$.

(b) Write down the coordinates of the maximum point of the graph of $y = f(-x)$.

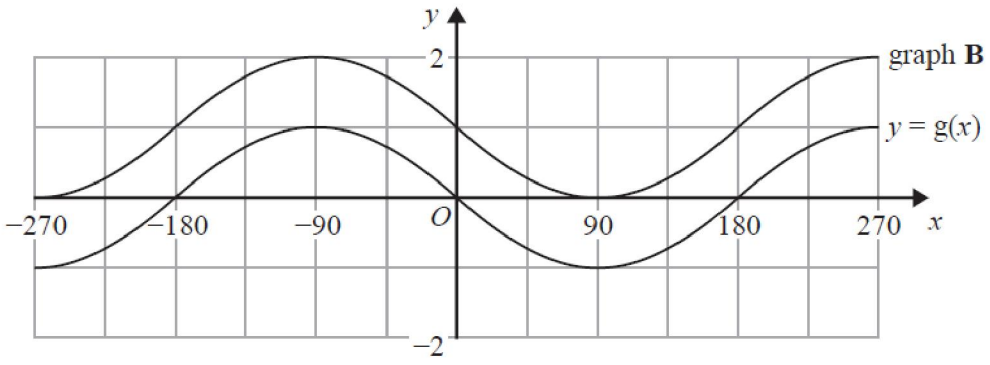
(..... , ...)

(2)

(Total 3 marks)

Question 6 (AO3): (No Calc) 23% of students got this right (1 marks)

22 b The graph of $y = g(x)$ is shown on the grid.



Graph **B** is a translation of $y = g(x)$.

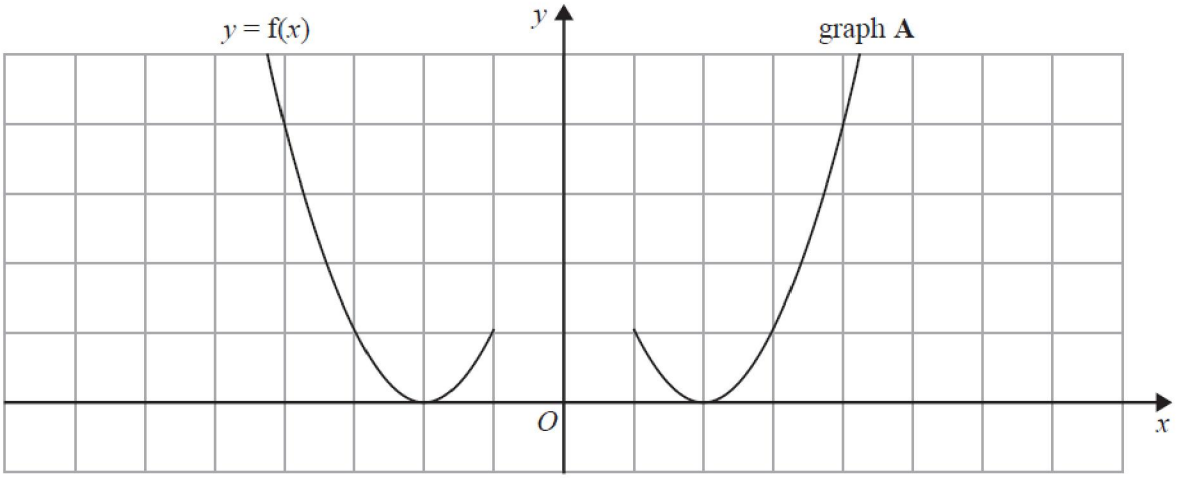
(b) Write down the equation of graph **B**.

.....

(1)

Question 7 (AO3): (No Calc) 20% of students got this right (1 marks)

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



Graph **A** is a reflection of the graph of $y = f(x)$.

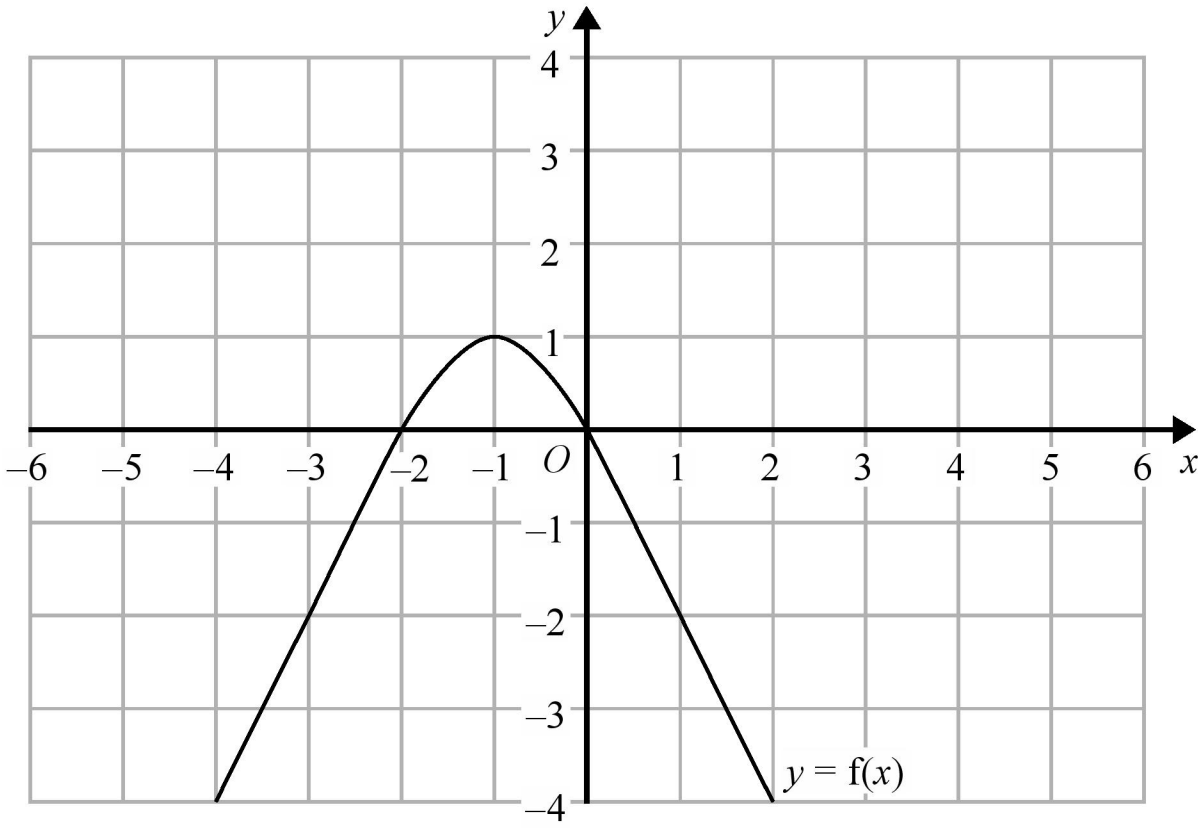
(a) Write down the equation of graph **A**.

.....

(1)

Question 8 (AO1): (No Calc) 19% of students got this right (1 marks)

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



(*a*) On the grid, sketch the graph of $y = f(x - 1)$

Question 9 (AO1): (No Calc) 13% of students got this right (1 marks)

18 The graph of $y = f(x)$ has a turning point at the point $(-1, 1)$

(b) Write down the coordinates of the turning point of the graph of $y = f(-x) + 2$

Question 10 (AO2): (No Calc) 10% of students got this right (4 marks)

21 Sketch the graph of $f(x) = -x^2 - 3x + 5$, showing the coordinates of the turning point and the coordinates of any intercepts with the coordinate axes.

(Total 4 mark)

Question 11 (AO3): 10% of students got this right (3 marks)

20 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.

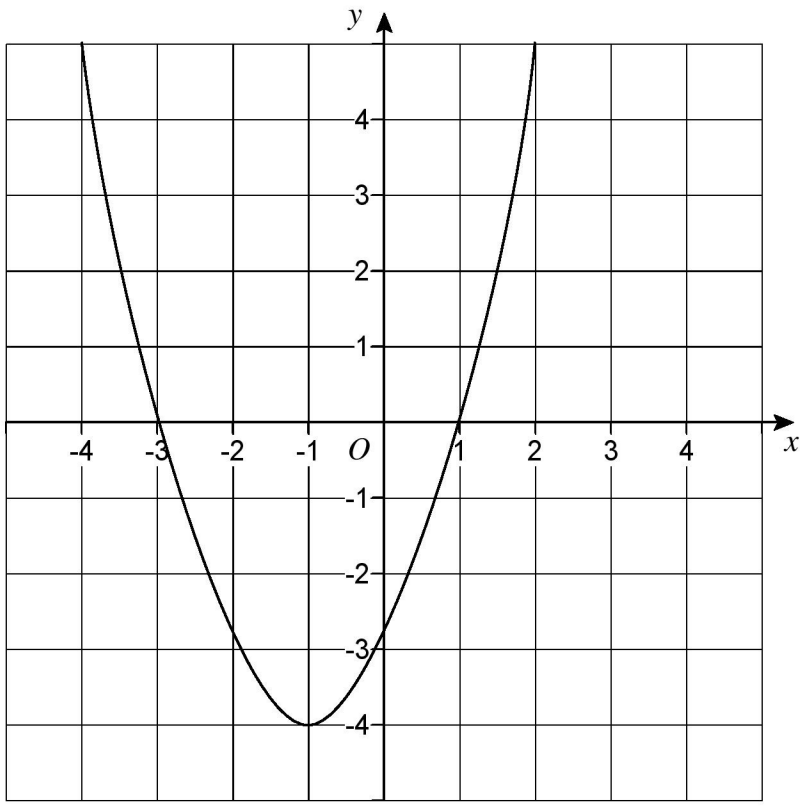
(3)

(Total for Question 20 is 4 marks)

Question 12 (AO1): 5% of students got this right (3 marks)

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

The graph has a turning point at (–1, –4)



On the grid, draw the graph of $y = f(x - 2)$

[1 mark]

24 (b) The graph of $y = -3x^2 + 4x - 5$ is reflected in the y-axis.

Work out the equation of the reflected graph.

Give your answer in its simplest form.

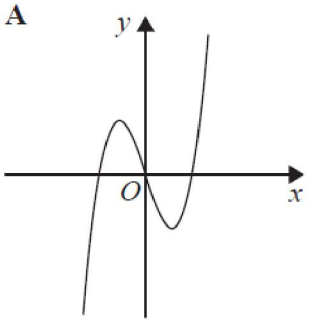
[2 marks]

Answer _____

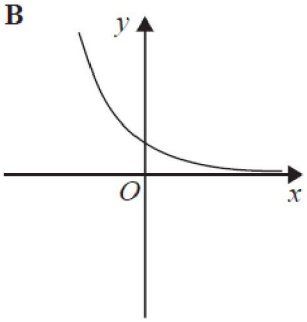
Answers to Qn 1 (AO1): 43% of students got this right

9 Here are six graphs.

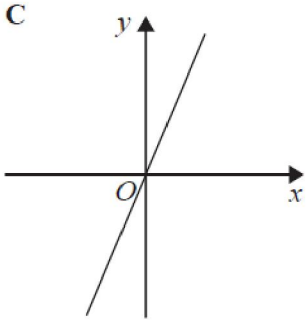
A



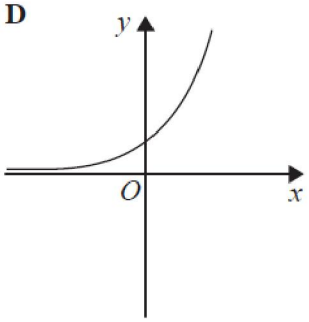
B



C



D



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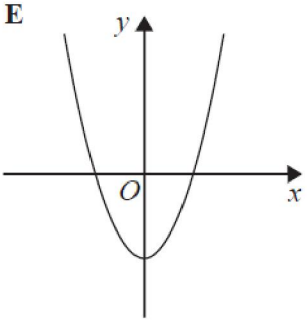

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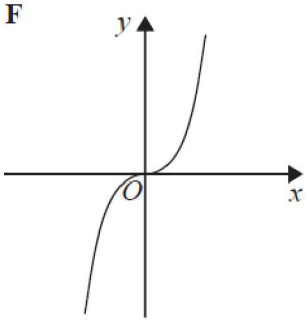


Write down the letter of the graph that could have the equation

(i) $y = 3^x$

D

.....

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

E

.....

(Total for Question 9 is 2 marks)

Answers to Qn 2 (AO1): 37% of students got this right

Question 14 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	C, F, A, H **Equation** / **Graph** $y = \sin x$ — C $y = x^3 + 4x$ — F $y = 2^x$ — A $y = \frac{4}{x}$ — H	B3	This mark is given for a fully correct table (Two marks are given for two or three correct, one mark is given for one correct)

Answers to Qn 3 (AO1): (No Calc) 33% of students got this right

17.	(*a*)		(5,–4)	2	B2 for (5,–4) (B1 for (*a*,–4) or (5,*b*) where $a \neq 5$ or 3 and $b \neq -4$).
	(*b*)		(–2,2)	2	B2 for (–2,2) (B1 for (*a*,2) or (–2,*b*) where $a \neq -2$ and $b \neq 2$).

Answers to Qn 4 (AO1): 33% of students got this right

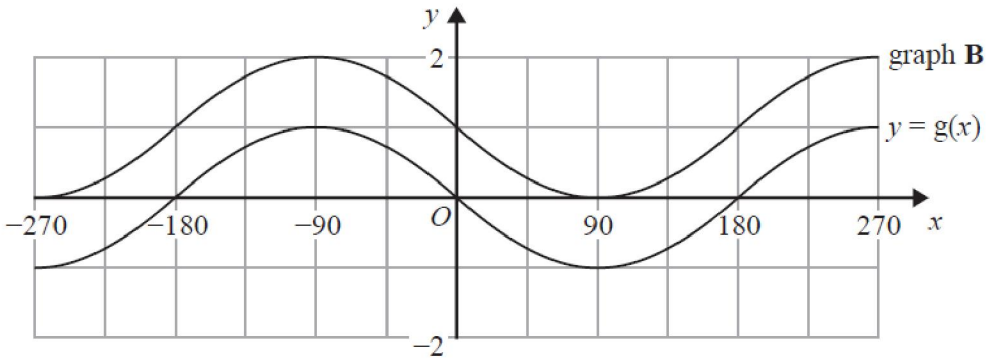
18.	(*a*) (i)(ii)		(2, 0) and (6, 0) (0, 4)	2	B1 for (2, 0) and (6, 0) B1 for (0, 4)
	(*b*)		Drawn curve	2	M1 for a translation in the positive *y*-direction A1 for curve passing through (2, 0), (0, 2) and (4, 2)

Answers to Qn 5 (AO1): 26% of students got this right

Question		Working	Answer	Mark	Notes
17	(a)		$y - f(x - 5)$	1	B1 cao
	(b)		(4, 3)	2	B2 cao (B1 for one coord. correct (in correct position) or (3,4).)

Answers to Qn 6 (AO3): (No Calc) 23% of students got this right

22 b The graph of $y = g(x)$ is shown on the grid.



Graph **B** is a translation of $y = g(x)$.

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

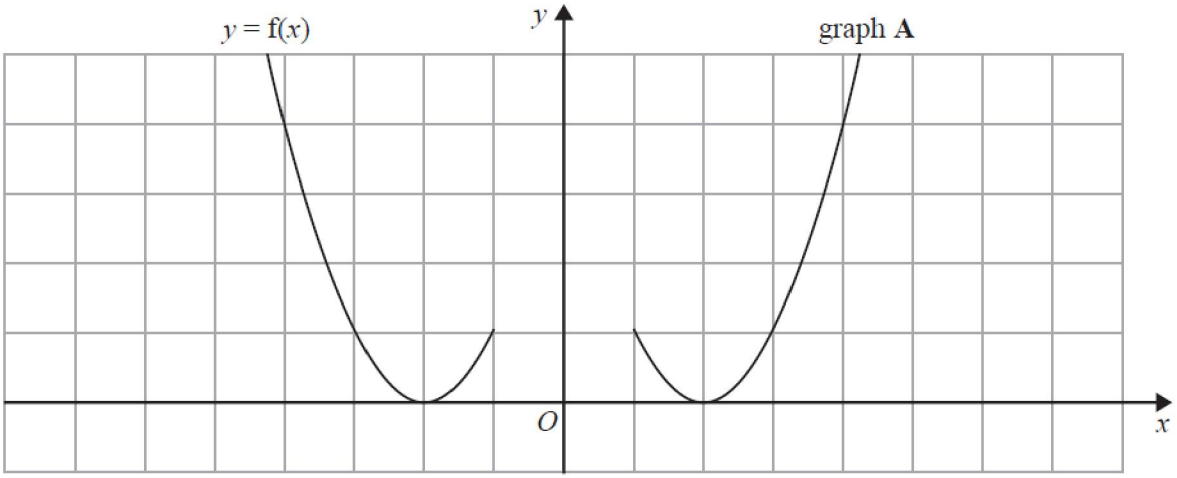
Vertical translation: $y = g(x) + 1$

.....

(1)

Answers to Qn 7 (AO3): (No Calc) 20% of students got this right

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



Graph **A** is a reflection of the graph of $y = f(x)$.

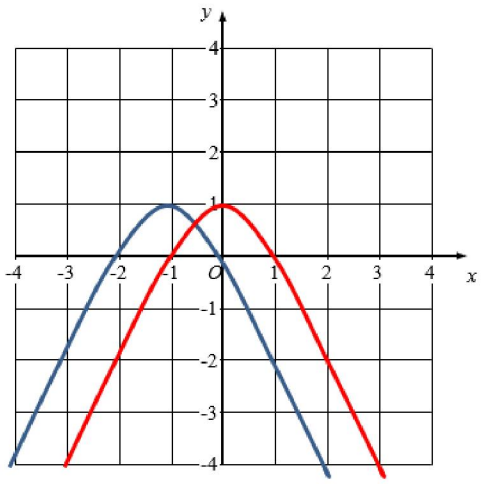
(a) Write down the equation of graph **A**.

Reflection in y-axis: $y = f(-x)$

.....

(1)

Answers to Qn 8 (AO1): (No Calc) 19% of students got this right

Question	Working	Answer	Mark	Notes
18 (a)	Translation 		B1	for graph translated 1 unit in the positive x-direction

Answers to Qn 9 (AO1): (No Calc) 13% of students got this right

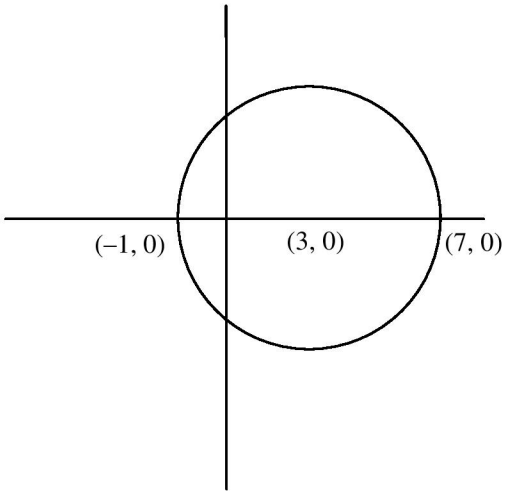
Question	Working	Answer	Mark	Notes
18 (b)		(1, 3)	B1	cao

Answers to Qn 10 (AO2): (No Calc) 10% of students got this right

21.				4	M1 for $-((x+1.5)^2-(1.5)^2-5)$ or attempt to find points to plot - must have at least 3 correct points evaluated or correct method to find x axis intercepts A1 for $-((x+1.5)^2-7.25)$ or parabola with marximum marked at $(-1.5, 7.25)$ or $\frac{3\pm\sqrt{29}}{2}$ C1 for parabola drawn with maxiumum in 2nd quadrant or y intercept $(0, 5)$ or with x axis intercepts at $\left(\frac{3\pm\sqrt{29}}{2},0\right)$ C1 for parabola drawn with maxiumum (-1.5, 7.25) and y intercept $(0, 5)$ and x axis intercepts at $\left(\frac{3\pm\sqrt{29}}{2},0\right)$

Answers to Qn 11 (AO3): 10% of students got this right

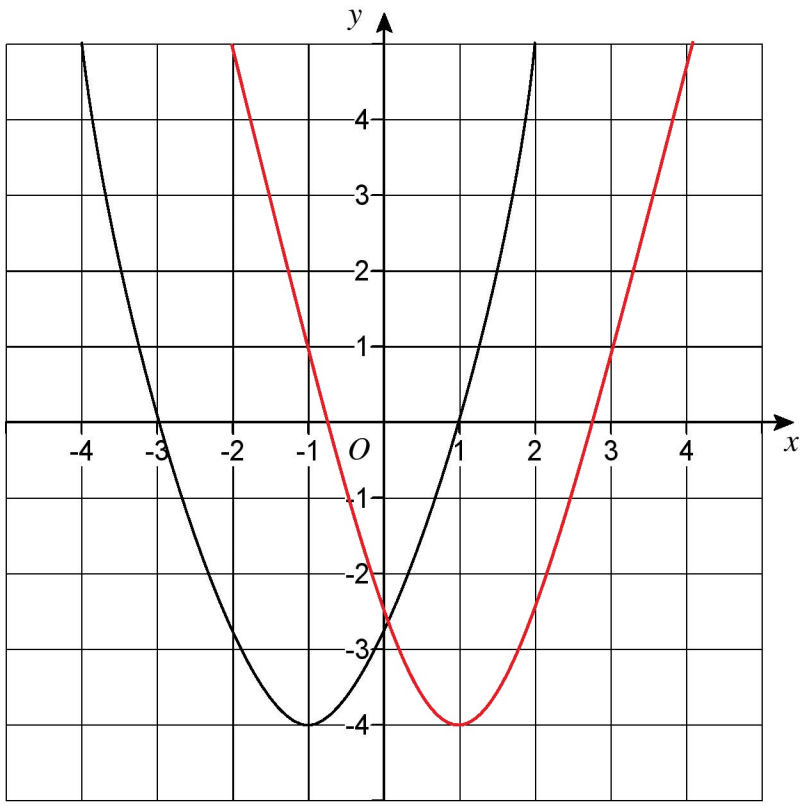
Question 20 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(b)		M1	This mark is given for any one of a circle with radius 4, centre (3, 0) or points (−1, 0) and (7, 0) labelled
		M1	This mark is given for any further element of a circle with radius 4, centre (3, 0) or points (−1, 0) and (7, 0) labelled
		A1	This mark is given for a fully correct sketch only: a circle with radius 4 and centre (3, 0) and with the points (−1, 0) and (7, 0) labelled

Answers to Qn 12 (AO1): 5% of students got this right

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

The graph has a turning point at (–1, –4)



On the grid, draw the graph of $y = f(x - 2)$

[1 mark]

24 (b) The graph of $y = -3x^2 + 4x - 5$ is reflected in the y-axis.

Work out the equation of the reflected graph.

Give your answer in its simplest form.

[2 marks]

Answer $y = -3x^2 - 4x - 5$