FOUNDATION & HIGHER

HIGHER EXTENDS

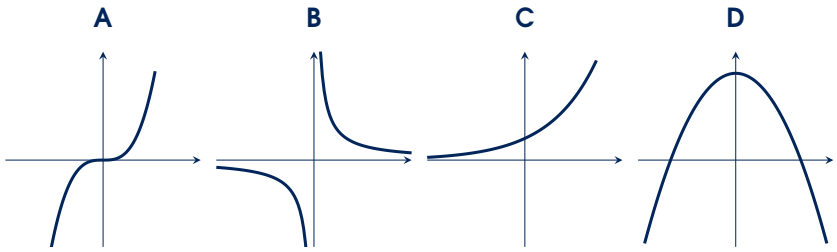
Name ..... Class .....

A12: Recognising graphs

Linear, quadratic, cubic, reciprocal, exponential and trigonometric graphs

20 marks · 25 minutes · Non-calculator

1) Here are sketches of four graphs.



Match each graph to its equation. One equation is not used.

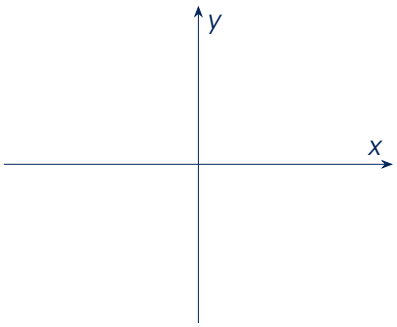
$y = 2x + 1$	$y = 4 - x^2$	$y = \frac{1}{x}$	$y = x^3$	$y = 2^x$

Write the letter of the graph under its equation.

(4)

[Question 1: 4 marks]

2) Sketch the graph of $y = x^2 - 4$. Show where it crosses the axes.



[Question 2: 2 marks]

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3) For the graph of $y = \sin x$ for $0° \leqslant x \leqslant 360°$:

(a) What is the greatest value of y?

.....

(1)

(b) Write down the values of x where $y = 0$

.....

(1)

[Question 3: 2 marks]

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4) State the coordinates of the lowest point on $y = \cos x$ for $0° \leqslant x \leqslant 360°$

.....

[Question 4: 1 marks]

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5) Where does the graph of $y = 3^x$ cross the y-axis?

.....

[Question 5: 1 marks]

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6) Fill in the table of values for $y = x^3 - 2$

x	-2	-1	0	1	2
y					

[Question 6: 2 marks]

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7) For $y = 2^x$, find the value of y when

(a) $x = 3$

.....

(1)

(b) $x = -1$

.....

(1)

[Question 7: 2 marks]

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8) For $0° \leqslant x \leqslant 360°$:

(a) At what value of x does $y = \sin x$ have its maximum?

.....

(1)

(b) Write down the values of x for which $\cos x = 0$

.....

(1)

[Question 8: 2 marks]

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9) Name the type of graph for each equation. Choose from: linear, quadratic, cubic, reciprocal, exponential.

(a) $y = \frac{5}{x}$

.....

(1)

(b) $y = 3x^2 - 1$

.....

(1)

(c) $y = x^3 + x$

.....

(1)

(d) $y = 4^x$

.....

(1)

[Question 9: 4 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	$4-x^2$: D; $\frac{1}{x}$: B; x^3: A; 2^x: C	B1 each. $y = 2x + 1$ not used.
2	U-shaped parabola	U shape (B1); crosses x-axis at -2 and 2 and y-axis at -4 (B1).
3	(a) 1 (b) 0°, 180°, 360°	B1 each.
4	(180°, −1)	B1.
5	(0, 1)	B1.
6	−10, −3, −2, −1, 6	B2 (B1 for 3 or 4 correct).
7	(a) 8 (b) $\frac{1}{2}$	B1 each.
8	(a) 90° (b) 90°, 270°	B1 each.
9	(a) reciprocal (b) quadratic (c) cubic (d) exponential	B1 each.