

Surname	
Other Names	
Candidate Signature	

Centre Number						Candidate Number				
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Examiner Comments	

Total Marks

MATHEMATICS

A LEVEL QUESTION COMPILATION

CM

Questions on: Transformations

Instructions to candidates:

- In the boxes above, write your centre number, candidate number, your surname, other names and signature.
- Answer ALL of the questions.
- You must write your answer for each question in the spaces provided.
- You may use a calculator.

Information to candidates:

- Full marks may only be obtained for answers to ALL of the questions.
- The marks for individual questions and parts of the questions are shown in round brackets.
- There are 3 questions in this question paper. The total mark for this paper is 20.

Advice to candidates:

- You should ensure your answers to parts of the question are clearly labelled.
- You should show sufficient working to make your workings clear to the Examiner.
- Answers without working may not gain full credit.



1

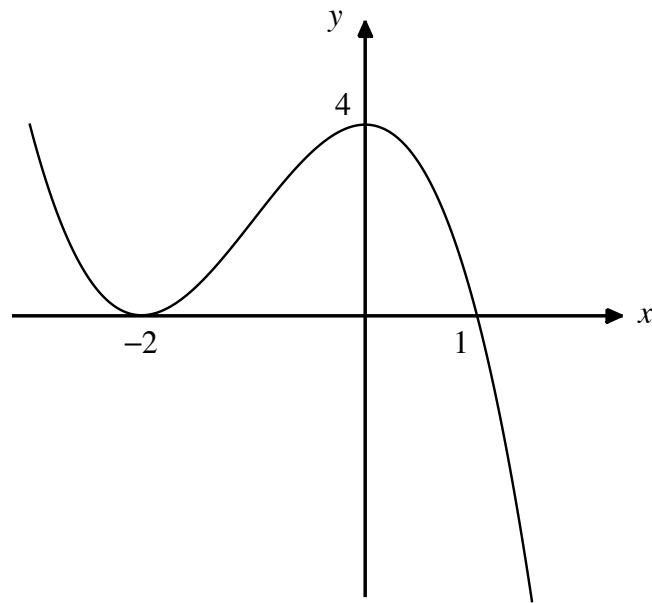
**Figure 1**

Figure 1 above shows a sketch of the curve with equation $y = f(x)$.

The curve crosses the coordinate axes at the points $(-2, 0)$, $(1, 0)$ and $(0, 4)$.

On separate axes, sketch the curves with equations

(a) $y = f(2x) + 4$

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

On each sketch, show clearly the coordinates of any points where the curve crosses or meets the coordinate axes.

(6)

Question 1 continued

TOTAL 6 MARKS



1 5 3 3 2 2 1 1 8 0 0 0 4



2

$$f(x) = \ln(x), \quad x > 0$$

On separate axes, sketch the curves with equation

(a) $y = f(x)$

(b) $y = f(3x) - 4$

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

On each sketch, show clearly the coordinates of any points where the curve crosses or meets the coordinate axes and state the equation of any asymptotes. (7)



1 5 3 3 2 2 1 1 8 0 0 0 4

Question 2 continued

TOTAL 7 MARKS



1 5 3 3 2 2 1 1 8 0 0 0 4



3

$$f(x) = \frac{2}{x}, x \neq 0$$

On separate axes, sketch the curves with equation

(a) $y = f(x)$

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

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

On each sketch, show clearly the coordinates of any points where the curve crosses or meets the coordinate axes and state the equation of any asymptotes. (7)



Question 3 continued

TOTAL 7 MARKS



1 5 3 3 2 2 1 1 8 0 0 0 4

