MME
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GCSE MATHEMATICS

AQA | Edexcel | OCR | WJEC

(Level 6-8)

Functions – Inverse and composite functions

Please write clearly in block capitals

Forename:
Surname:

Materials

For this paper you must have:
- mathematical instruments

You must ***not*** use a calculator.

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer all questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- You may ask for graph paper, tracing paper and more answer paper. These must be tagged securely to this answer book.

Advice

- In all calculations, show clearly how you work out your answer.

1 Given that $f(x) = x - 9$, find: *(Level 6)*

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

[1 mark]

Answer _____

1(b) $f^{-1}(4)$

[1 mark]

Answer _____

2 Given that $f(x) = 5x - 3$,find: **(Level 6)**

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

[1 mark]

Answer _____

2(b) $f^{-1}(3)$

[1 mark]

Answer _____

Turn over for next question

4

3 Given that $f(x) = \frac{x-8}{3}$, find: *(Level 7)*

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

[1 mark]

Answer _____

3(b) $f^{-1}(10)$

[1 mark]

Answer _____

4 Given that $f(x) = \sqrt{\frac{-x+2}{4}}$, find:

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

[2 marks]

Answer _____

4(b) $f^{-1}(3)$

[2 marks]

Answer _____

Turn over for next question

6

5 Functions f and g are defined by $f(x) = 2x + 4$ and $g(x) = 3x + 1$. *(Level 7)*

5(a) Find the value of x when $f(x) = g(x)$

[1 mark]

Answer _____

5(b) Find and simplify the expression for $fg(x)$

[2 marks]

Answer _____

5(c) Find and simplify the expression for $gf(x)$

[2 marks]

Answer _____

Turn over for next question

5

6 Given that $f(x) = \frac{5}{x-1}$ and $g(x) = 4 - 2x$, find: *(Level 8)*

6(a) $ff^{-1}(-2)$

[2 marks]

Answer _____

6(b) $gg(-3)$

[2 marks]

Answer _____

6(c) A simplified expression for $fg(x)$.

[2 marks]

Answer _____

Turn over for next question

6

7(a) Given that $f(x) = x^2 - a$ and $g(x) = x + b$, find an expression for $fg(x)$ in terms of a and b. *(Level 8)*

[2 marks]

Answer _____

7(b) If $b = 2a$, and $a = -3$, what is the value of $fg(5)$?

[2 marks]

Answer _____

4

END