7.9 Inverse and Composite Functions: 30-minute Pack

EDEXCEL 1MA1 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Work out h(0) for h(x) = 4x - 5.

(Total for Question 1 is 1 mark)

2 Work out f(-2) for $f(x) = 2x^2$.

(Total for Question 2 is 1 mark)

3 Let f(x) = x - 5 and g(x) = 3x + 2.

(a) Find (g o f)(x). **(2)**

(b) Find (f o g)(x). **(2)**

(Total for Question 3 is 4 marks)

4 Find the inverse function $f^{-1}(x)$ for f(x) = 3x + 4. Give the inverse in terms of x.

(Total for Question 4 is 2 marks)

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5 $f(x) = x - 1$ and $g(x) = -2x - 5$. Find $fg(x)$. Give your answer in its simplest form.

(Total for Question 5 is 3 marks)

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6 $f(x) = (x - 4)/6$. Find the inverse function $f^{-1}(x)$.

(Total for Question 6 is 3 marks)

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7 $f(x) = (x - 5)^2$, $x \geq 5$. Find the inverse function $f^{-1}(x)$.

(Total for Question 7 is 3 marks)

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8 $f(x) = 2x - 3$ and $g(x) = -x + 2$. Solve $fg(x) = -9$.

(Total for Question 8 is 3 marks)

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9 $f(x) = (x + 2)/4$. Work out $f^{-1}(-2)$.

(Total for Question 9 is 2 marks)

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10 $f(x) = -3x - 6$ and $g(x) = -5x + 4$. Find $gf(x)$. Give your answer in its simplest form.

(Total for Question 10 is 3 marks)

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Mark scheme · 7.9 Inverse and Composite Functions: 30-minute Pack

Question 1

-5 cao **B1**

Answer: -5

Question 2

8 cao **B1**

Answer: 8

Question 3

(a) substitute f(x) into g: g(f(x))=3(x-5)+2 or equivalent **M1**

(a) 3x - 13 cao **A1**

(a) Answer: 3x - 13

(b) substitute g(x) into f: f(g(x))=(3x+2)-5 or equivalent **M1**

(b) 3x - 3 cao **A1**

(b) Answer: 3x - 3

Question 4

method: set y=3x+4, swap x and y and solve for y or equivalent **M1**

$f^{-1}(x) = (x - 4)/3$ cao **A1**

Answer: $f^{-1}(x) = (x - 4)/3$

Question 5

substitutes g(x) into f **M1**

expands brackets **M1**

-2x - 6 **A1**

Answer: -2x - 6

Question 6

writes y = f(x) and attempts to rearrange for x **M1**

correct rearrangement **M1**

6x + 4 oe **A1**

Answer: 6x + 4

Question 7

writes y = f(x) and rearranges **M1**

takes the positive square root **M1**

$\sqrt{x}$ + 5 oe **A1**

Answer: $\sqrt{x}$ + 5

Question 8

fg(x) = 2(-x + 2) - 3 **M1**

-2x + 1 = -9 and attempts to solve **M1**

x = 5 **A1**

Answer: x = 5

Question 9

-2 = (x + 2)/4 or finds $f^{-1}(x)$ **M1**

-10 **A1**

Answer: -10

Question 10

substitutes f(x) into g **M1**

expands brackets **M1**

15x + 34 **A1**

Answer: 15x + 34

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