FOUNDATION & HIGHER

HIGHER EXTENDS

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

A7: Functions

Function notation, inverse and composite functions

20 marks · 25 minutes · Non-calculator

1) $f(x) = 3x - 5$

(a) Find $f(4)$.

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(1)

(b) Solve $f(x) = 13$

.....

(1)

[Question 1: 2 marks]

2) $g(x) = x^2 + 1$

(a) Find $g(-3)$.

.....

(1)

(b) Find $g(0.5)$.

.....

(1)

[Question 2: 2 marks]

3) $f(x) = 3x - 5$. Find $f^{-1}(x)$.

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[Question 3: 2 marks]

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4) $f(x) = 3x - 5$ and $g(x) = x^2 + 1$

(a) Find fg(2).

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(2)

(b) Find $fg(x)$. Simplify your answer.

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(2)

[Question 4: 4 marks]

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5) $f(x) = 2x^2 - 3$

(a) Find $f(-2)$.

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(1)

(b) Solve $f(x) = 47$

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(2)

[Question 5: 3 marks]

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6) $g(x) = \frac{x+4}{3}$. Find $g^{-1}(x)$.

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[Question 6: 2 marks]

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7) $f(x) = x + 2$ and $g(x) = 3x$

(a) Find $gf(x)$.

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(1)

(b) Find $fg(x)$.

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(1)

(c) Find $gf(4)$.

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(1)

[Question 7: 3 marks]

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8) $h(x) = 5 - 2x$. Find $h^{-1}(x)$.

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[Question 8: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	(a) 7 (b) 6	B1 each.
2	(a) 10 (b) 1.25	B1 each.
3	$\frac{x+5}{3}$	$y = 3x - 5$ rearranged or swapped (M1); A1.
4	(a) 10 (b) $3x^2 - 2$	(a) g(2) = 5 (M1); A1. (b) $3(x^2 + 1) - 5$ (M1); A1.
5	(a) 5 (b) $x = \pm 5$	(a) B1. (b) $x^2 = 25$ (M1); A1.
6	$3x - 4$	$3y = x + 4$ or equivalent swap (M1); A1.
7	(a) $3x + 6$ (b) $3x + 2$ (c) 18	B1 each.
8	$\frac{5-x}{2}$	Rearrange or swap (M1); A1.