HIGHER

2.7 Functions: Domain and Range Restrictions: 10-minute Pack

Total Marks

EDEXCEL 4MA1 · Calculator allowed · about 10 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 $g(x) = 1/x$
$h(x) = x + 5$
Find $gh(x)$ and state the largest possible domain of gh.

(Total for Question 1 is 3 marks)

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2 $f(x) = 3/(-x - 8)$
State the value of x that must be excluded from the domain of f.

(Total for Question 2 is 2 marks)

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3 Consider the linear function $L(x) = -2x + 5$ with domain x in [0, 3]. Find the range of L over this restricted domain and give it in inequality form.

(Total for Question 3 is 3 marks)

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Mark scheme · 2.7 Functions: Domain and Range Restrictions: 10-minute Pack

Question 1

$gh(x) = 1/(x + 5)$	**M1**
requires $x + 5 \neq 0$	**M1**
$gh(x) = 1/(x + 5)$, domain $x \neq -5$	**A1**

Answer: $gh(x) = 1/(x + 5)$, domain $x \neq -5$

Question 2

the denominator cannot be zero: $-x - 8 = 0$	**M1**
$x = -8$ is excluded, domain $x \neq -8$	**A1**

Answer: $x \neq -8$

Question 3

evaluates L at the endpoints $x = 0$ and $x = 3$, giving 5 and -1	**M1**
identifies the max and min correctly and orders them for the range, e.g. $-1 \leq L(x) \leq 5$	**A1**
gives the range in correct inequality form, $-1 \leq L(x) \leq 5$ cao	**B1**

Answer: $-1 \leq L(x) \leq 5$

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