Further Pure Maths: Logarithms and Exponential Equations: 10-minute Pack

EDEXCEL 4PM1 · Calculators not allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Write $\log_3(81) = 4$ in index form.

(Total for Question 1 is 1 mark)

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2 Solve $\log_5(x-1) = 2 - \log_5(x+1)$. Check any candidate solutions in the original equation.

(Total for Question 2 is 4 marks)

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3 Simplify $\log_5(25) + \log_5(5)$. Give one logarithm.

(Total for Question 3 is 2 marks)

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Mark scheme · Further Pure Maths: Logarithms and Exponential Equations: 10-minute Pack

Question 1

$3^4 = 81$ stated correctly; accept equivalent forms and valid alternative methods for the corresponding marks	**B1**

Answer: $3^4 = 81$

Question 2

States $x>1$ and rewrites 2 as $\log_5(25)$	**M1**
Combines to $\log_5((x-1)(x+1))=\log_5(25)$	**M1**
Solves $x^2-1=25$ to obtain $x= \sqrt{26}$ or $x=-\sqrt{26}$; also award when a valid method restricted to the domain finds only the admissible root	**A1**
Rejects the negative candidate by the domain and gives $x=\sqrt{26}$; accept equivalent forms and valid alternative methods for the corresponding marks; also award a domain argument excluding all other roots without generating inadmissible candidates	**A1**

Answer: $x = \sqrt{26}$

Question 3

Uses the product law to combine as $\log_5(25*5)$	**M1**
$\log_5(125)$; accept equivalent forms and valid alternative methods for the corresponding marks	**A1**

Answer: $\log_5(125)$

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