HIGHER

8.5 The Nth Term of a Quadratic Sequence: 10-minute Pack

Total Marks

EDEXCEL 1MA1 · Calculator allowed · about 10 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Write down the first four terms of the sequence defined by $T(n) = 2n^2 - n + 3$.

(Total for Question 1 is 2 marks)

2 Find an expression for the nth term of the sequence 2, 9, 20, 35.

(Total for Question 2 is 2 marks)

3 Work out an expression for the nth term of the sequence 5, 12, 21, 32, 45.

(Total for Question 3 is 2 marks)

4 The sequence 5, 11, 19, 29, 41,... is generated by a quadratic rule. Show that the nth term is $n^2 + 3n + 1$.

(Total for Question 4 is 3 marks)

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Mark scheme · 8.5 The Nth Term of a Quadratic Sequence: 10-minute Pack

Question 1

substitute n = 1, 2, 3, 4 into $2n^2 - n + 3$ oe	**M1**
4, 9, 18, 31 cao	**A1**

Answer: 4, 9, 18, 31

Question 2

second differences 7, 11, 15 so second difference = 4 and a = 2 (2a = 4) oe	**M1**
nth term = $2n^2 + n - 1$ cao	**A1**

Answer: $2n^2 + n - 1$

Question 3

second difference = 2 so a = 1 (2a = 2) oe	**M1**
nth term = $n^2 + 4n$ cao	**A1**

Answer: $n^2 + 4n$

Question 4

second difference = 2 so a = 1 (2a = 2) oe	**M1**
use n = 1 and n = 2 to find b and c (1 + b + c = 5 and 4 + 2b + c = 11) oe	**M1**
nth term = $n^2 + 3n + 1$ cao cso	**A1**

Answer: $n^2 + 3n + 1$

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