



Sequences and Series

Questions

Suitable for:

Pearson Edexcel International A-Level (iAL) — Pure Mathematics 2



Question 1

An arithmetic sequence has first term 7 and common difference 4.

(a) Find the 20th term of the sequence.

(2 marks)

(b) Find the sum of the first 20 terms.

(2 marks)

Total for question = 4 marks



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Question 2

In an arithmetic sequence, the 5th term is 23 and the 12th term is 51.

(a) Find the first term and the common difference of the sequence.

(3 marks)

(b) Find the sum of the first 15 terms.

(2 marks)

Total for question = 5 marks





Question 3

A geometric sequence has first term 3 and common ratio 2.

(a) Find the 8th term of the sequence.

(2 marks)

(b) Find the sum of the first 10 terms.

(2 marks)

Total for question = 4 marks





Question 4

A geometric series has first term 5 and common ratio 3.

Find the smallest value of n for which the sum of the first n terms exceeds 50 000.

(4 marks)

Total for question = 4 marks



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Question 5

A geometric series has first term 12 and common ratio $\frac{1}{3}$ (one third).

(a) Find the sum to infinity of the series.

(2 marks)

(b) Find the smallest value of n such that the sum of the first n terms of the series differs from the sum to infinity by less than 0.001.

(4 marks)

Total for question = 6 marks





Question 6

Evaluate

$$\sum_{r=1}^{10} (3r + 2)$$

(3 marks)

Total for question = 3 marks



Question 7

A sequence is defined by the recurrence relation

$$x_{n+1} = 3x_n - 5, \quad x_1 = 4$$

(a) Write down the first five terms of the sequence.

(2 marks)

(b) State, with a reason, whether the sequence is increasing, decreasing or periodic.

(2 marks)

Total for question = 4 marks





Question 8

A sequence is defined by the recurrence relation

$$x_{n+1} = \frac{k}{x_n}$$

where k is a constant. Given that $x_1 = 2$ and $x_2 = 6$,

(a) find the value of k ,

(1 marks)

(b) write down the values of x_3 , x_4 and x_5 ,

(2 marks)

(c) state the period of the sequence.

(1 marks)

Total for question = 4 marks

