4.3 Geometric Sequences & Series

Question Paper

Course	Edexcel IAL Maths: Pure 2
Section	4. Sequences & Series
Topic	4.3 Geometric Sequences & Series
Difficulty	Hard

Time allowed: **50**

Score: **/42**

Percentage: **/100**

Question 1

The first three terms of a geometric sequence are given by $x + 12$, $3x$, and x^2 respectively, where x is a non-zero real number.

Find the value of the 102nd term in the sequence.

[5 marks]

Question 2

A geometric series has first term 14 and common ratio $\frac{99}{100}$.

Given that the sum of the first k terms of the series is less than 1000, find the largest possible value of k.

[5 marks]

Question 3

The sum of the first three terms in a geometric series is 8.75.
The sum of the first six terms in the same series is 13.23.

Find the common ratio, r, of the series.

[4 marks]

Question 4

A geometric series has first term a and common ratio $\sqrt{5}$.

Show that the sum of the first ten terms of the series is equal to $ka\left(\sqrt{5}+1\right)$, where k is a positive integer to be determined.

[4 marks]

Question 5

The first three terms in a geometric series are $(2k + 3)$, k, $(k - 2)$, where $k < 0$ is a constant.

(a) Find the value of k.

[5 marks]

Question 5

(b) Find the sum of the first 12 terms in this series.

[3 marks]

Question 6

The second and fifth terms of a geometric series are 13.44 and 5.67 respectively. The series has first term a and common ratio r.

(a) By first determining the values of a and r, calculate the sum to infinity of the series.

[6 marks]

Question 6

(b) Calculate the difference between the sum to infinity of the series and the sum of the first 20 terms of the series. Give your answer accurate to 2 decimal places.

[2 marks]

Question 7

A geometric series has first term 9, and the sum of the first three terms of the series is 19. The common ratio of the series is r.

(a) Show that $9r^2 + 9r - 10 = 0$.

[3 marks]

Question 7

(b) Find the two possible values of r.

[2 marks]

Question 7

(c) Given that the series converges, find the sum to infinity of the series.

[3 marks]