

4.2 Arithmetic Progressions

Question Paper

Course	CIEAS Maths
Section	4. Sequences & Series
Topic	4.2 Arithmetic Progressions
Difficulty	Very Hard

Time allowed: 40
Score: /30
Percentage: /100

Question 1

The first four terms in an arithmetic sequence are $(2q - p)$, 1 , $(p - q)$, $(3p - 4q)$, ...

Find the values of p and q .

[4 marks]

Question 2

The first three terms in an arithmetic sequence are 2 , $3q^2$, q , ...

Given that the first three terms in the sequence are all positive, find the fortieth term in the sequence.

[4 marks]

Question 3

The k th term of an arithmetic progression is given by $u_k = 89 - 5k$. Given that the sum of the first n terms is equal to -35 , find the value of n .

[4 marks]

Question 4

The k th term of an arithmetic series is 0. The sum of the first n terms is also 0.

Find the value of n in terms of k , giving clear reasons for your answer.

[3 marks]

Question 5

The sum of the first 20 terms in an arithmetic series is 290. The sum of the first 24 terms in the same series is -180. In general, the sum of the first n terms is S_n . Find the greatest value attained by S_n for any $n \geq 1$.

[6 marks]

Question 6

The sum of the first 24 terms in an arithmetic series is nine times the sum of the first two terms in the series.

Find the sum of the first 90 terms in the series.

[4 marks]

Question 7

An arithmetic progression has first term a and common difference d .

Given that

the sum of the seventh through twelfth terms is -69 ,

the sum of the seventh through sixteenth terms is -175 , and

the sum of the first six terms is $-13d$,

find the values of a and d .

[5 marks]