

Chapter 11 Series Part 2

0606/22/F/M/20

1. (a) The sum of the first two terms of a geometric progression is 10 and the third term is 9.

(i) Find the possible values of the common ratio and the first term.

[5]

(ii) Find the sum to infinity of the convergent progression.

[1]

(b) In an arithmetic progression, $u_1 = -10$ and $u_4 = 14$. Find $u_{100} + u_{101} + u_{102} + \dots + u_{200}$, the sum of the 100th to the 200th terms of the progression.

[4]

0606/11/M/J/20

2. (a) An arithmetic progression has a second term of -14 and a sum to 21 terms of 84 .
Find the first term and the 21st term of this progression.

[5]

(b) A geometric progression has a second term of $27p^2$ and a fifth term of p^5 . The common ratio, r , is such that $0 < r < 1$.

(i) Find r in terms of p .

[2]

(ii) Hence find, in terms of p , the sum to infinity of the progression.

[3]

(iii) Given that the sum to infinity is 81, find the value of p .

[2]

0606/13/M/J/20

3.(a) An arithmetic progression has a first term of 7 and a common difference of 0.4.
Find the least number of terms so that the sum of the progression is greater than 300.

[4]

(b) The sum of the first two terms of a geometric progression is 9 and its sum to infinity is 36. Given that the terms of the progression are positive, find the common ratio.

[4]

0606/22/M/J/20

4.(a) The first 5 terms of a sequence are given below.

4 -2 1 -0.5 0.25

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

[2]

(ii) Explain why the sum to infinity exists for this sequence and find the value of this sum.

[2]

(b) The tenth term of an arithmetic progression is 15 times the second term. The sum of the first 6 terms of the progression is 87.

(i) Find the common difference of the progression.

[4]

(ii) For this progression, the n th term is 6990. Find the value of n .

[3]

0606/11/O/N/20

5.(a) An arithmetic progression has a second term of 8 and a fourth term of 18. Find the least number of terms for which the sum of this progression is greater than 1560.

[6]

(b) A geometric progression has a sum to infinity of 72. The sum of the first 3 terms of this progression is $\frac{333}{8}$.

(i) Find the value of the common ratio.

[5]

(ii) Hence find the value of the first term.

[1]

0606/12/O/N/20

6. The 7th and 10th terms of an arithmetic progression are 158 and 149 respectively.

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

[3]

(b) Find the least number of terms of the progression for their sum to be negative.

[3]

0606/23/O/N/20

7.(a) The sum of the first 4 terms of an arithmetic progression is 38 and the sum of the next 4 terms is 86. Find the first term and the common difference.

[5]

(b) The third term of a geometric progression is 12 and the sixth term is -96. Find the sum of the first 10 terms of this progression.

[6]