1. Nov/2022/Paper_0606_11/No.5

An arithmetic progression is such that the fourth term is 25 and the ninth term is 50.

(a) Find the first term and the common difference. [3]

(b) Find the least number of terms for which the sum of the progression is greater than 25 000. [3]

2. Nov/2022/Paper_0606_11/No.6

The first three terms, in ascending powers of x, in the expansion of $\left(1-\frac{2x}{9}\right)^{18}(1+3x)^3$ are written in the form $1+ax+bx^2$, where a and b are constants. Find the exact values of a and b. [7]

3. Nov/2022/Paper_0606_12/No.10

The first three terms of an arithmetic progression are $\lg x$, $\lg x^5$, $\lg x^9$, where $x > 0$.

(a) Show that the sum to n terms of this arithmetic progression can be written as $n(pn-1)\lg x$, where p is an integer. [4]

(b) Hence find the value of n for which the sum to n terms is equal to $4950\lg x$. [2]

(c) Given that this sum to n terms is also equal to -14850, find the exact value of x. [2]

4. Nov/2022/Paper_0606_13/No.5

A geometric progression is such that the fifteenth term is equal to $\frac{1}{8}$ of the twelfth term. The sum to infinity is 5.

(a) Find the first term and the common ratio. [4]

(b) Find the least number of terms needed for the sum of the geometric progression to be greater than 4.999. [3]

5. Nov/2022/Paper_0606_21/No.7

The sum of the first three terms of a geometric progression is 17.5 and the sum to infinity is 20.
Find the first term and the common ratio. [6]

6. Nov/2022/Paper_0606_22/No.10

(a) A geometric progression has third term 4.5 and sixth term 15.1875. Find the first term and the common ratio. [4]

(b) Find the sum of ten terms of the progression, starting with the sixteenth term. Give your answer to the nearest integer. [4]

7. Nov/2022/Paper_0606_23/No.6

The first four terms in ascending powers of x in the expansion $(3+ax)^4$ can be written as $81+bx+cx^2+\frac{3}{2}x^3$. Find the values of the constants a, b and c. [6]

8. Nov/2022/Paper_0606_23/No.10

(a) The third term of an arithmetic progression is 10 and the sum of the first 8 terms is 116. Find the first term and common difference. [5]

(b) Find the sum of nineteen terms of the progression, starting with the twelfth term. [4]