SEQUENCES

QUESTION 1

Here are the first four terms of an arithmetic sequence.

7 12 17 22

Find an expression, in terms of n, for the nth term of this sequence.

.....

(2 marks)

QUESTION 2

Here are the first five terms of a quadratic sequence.

4 17 36 61 92

(a) Find an expression, in terms of n, for the nth term of this sequence.

.....

(3)

The terms of a different sequence are given by the rule $u_{n+1} = ku_n + 2k$ where k is a constant.

Given that $u_1 = 8$ and $u_2 = 7$

(b) find the value of u_4

u_4 = ...

(3)

QUESTION 3

$x - 3$, $x + 2$ and $3x - 5$ are three consecutive terms of an arithmetic sequence.

(a) Find the value of x.

x = ...

(2)

$3y + 1$, $y + 2$ and $y - 4$ are three consecutive terms of a geometric sequence.

(b) Find the possible values of y.

[5]

Question 4

The 2nd term of a geometric sequence is $3 + 2\sqrt{3}$
The 3rd term of the sequence is $19 + 13\sqrt{3}$

Find the value of the common ratio of the sequence.

Give your answer in the form $a + \frac{b}{\sqrt{c}}$, where a, b and c are integers.

You must show all your working.

.....

(4 marks)

Question 5

Here are the first six terms of a quadratic sequence.

5 14 29 50 77 110

Find an expression, in terms of n, for the nth term of this sequence.

..... **(3)**

Question 6

Here are the first four terms of a quadratic sequence.

2 3 6 11

Find an expression, in terms of n, for the nth term of this sequence.

.....

(3)

Question 7

Here are the first five terms of a geometric sequence.

$\sqrt{7}$ 14 $28\sqrt{7}$ 392 $784\sqrt{7}$

(a) Work out the next term of the sequence.

.....

(2)

The 4th term of a different geometric sequence is $\frac{6\sqrt{3}}{9}$

The 6th term of this sequence is $\frac{6\sqrt{3}}{27}$

Given that the terms of this sequence are all positive,

(b) work out the first term of this sequence.
You must show all your working.

(3)

Question 8

Here are the first five terms of an arithmetic sequence.

4 9 14 19 24

(a) Find an expression, in terms of n, for the nth term of this sequence.

.....

(2)

The nth term of a different sequence is $6 - 5n$

(b) Is -59 a term of this sequence?
You must show how you get your answer.

(2)

Question 9

The first four terms of a Fibonacci sequence are

$3b$ $3b$ $6b$ $9b$

The sum of the first five terms of this sequence is 252

Work out the value of b.

.....

(3 marks)

Question 10

-The first five terms of an arithmetic sequence are

7 10 13 16 19

Write down an expression, in terms of n, for the nth term of this sequence.

.....

QUESTION 11

-Here are the first five terms of a quadratic sequence.

9 24 47 78 117

Find an expression, in terms of n, for the nth term of this sequence.

----------**(3)**

Question 12

The nth term of a sequence is $2n^2 + 1$
The nth term of a different sequence is $65 - 2n^2$

Show that there is only one number that is in both of these sequences.

(3)