

Name:

Result:

1.

(5 points)

The first three terms of an arithmetic sequence are:

$$x + 1, \quad 3x - 1, \quad x^2 + 1$$

- (a) Find the possible values of x .
- (b) For the larger value of x find:
 - (i) the fourth term of the sequence,
 - (ii) general formula for the sequence.

2.*(5 points)*

The first three terms of a geometric sequence are:

$$5x + 2, \quad 3x, \quad x + 1$$

- (a) Find the possible values of x .
- (b) For the integer value of x find:
 - (i) the fourth term of the sequence,
 - (ii) general formula for the sequence.

3.*(5 points)*

Consider an arithmetic sequence with $u_5 = 13$ and $u_8 = 4$.

- (a) Find the common difference d and the first term of the sequence u_1 .
- (b) Calculate how many terms of the sequence are greater than -100 .
- (c) Is -34 a term of this sequence? Justify your answer.

4.*(5 points)*

Consider an sequence defined by the recursive formula:

$$\begin{cases} v_1 = 10 \\ v_n = \frac{1}{2}v_{n-1} \end{cases}$$

(a) Write down the first three terms of this sequence and hence explain why the sequence is **not** arithmetic.

(b) Justify that the sequence is geometric.

(c) How many terms of this sequence are greater than $\frac{1}{100}$?