**Calculator Free**

**Geometric Sequences**

Time: 45 minutes

Total Marks: 45

Your Score: / 45



**Question One: [2, 2, 3 = 7 marks]**

Define each of the following sequences recursively and state :

1. 10, 20, 40, 80 …
2. 1000, 500, 250, 125 …
3. 

**Question Two: [1, 2, 2 = 5 marks]**

Consider the sequence 

1. Calculate 
2. Calculate 
3. Determine the general term of the sequence.

**Question Three: [2, 2, 1, 2, 2 = 9 marks]**

The first term of a geometric sequence is 6 and the 4th term is 48.

1. Determine the common ratio of this sequence.
2. Hence or otherwise define this sequence recursively.
3. Calculate 
4. Calculate 
5. Determine when the sequence first has a value greater than 300.

**Question Four: [2 marks]**

Show that the sequence can be written as 

**Question Five: [4 marks]**

Determine when the value of the sequence  and of the sequence are equivalent.

**Question Six: [5 marks]**

The 4th term of a geometric sequence is 5000 and the 7th term is 5 000 000.

Determine the value of the first term and the common ratio of this sequence.

**Question Seven: [5, 1, 2 = 8 marks]**

The first three terms of a geometric sequence are 

1. Determine the common ratio of this sequence.
2. Determine the value of the first term.
3. Hence determine the values of *a* and *b* in the rule defining this sequence: 

**Question Eight: [3, 2 = 5 marks]**

The first three terms of a geometric series are 

1. Determine the first three terms of the sequence.
2. Explain whether will be positive or negative.

**SOLUTIONS**

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**Geometric Sequences**

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Your Score: / 45



**Question One: [2, 2, 3 = 7 marks]**

Define each of the following sequences recursively and state :

1. 10, 20, 40, 80 …

 

1. 1000, 500, 250, 125 …

 

1. 

 

**Question Two: [1, 2, 2 = 5 marks]**

Consider the sequence 

1. Calculate  
2. Calculate  
3. Determine the general term of the sequence.



**Question Three: [2, 2, 1, 2, 2 = 9 marks]**

The first term of a geometric sequence is 6 and the 4th term is 48.

1. Determine the common ratio of this sequence.

 

1. Hence or otherwise define this sequence recursively.

 

1. Calculate 

 

1. Calculate 

 

1. Determine when the sequence first has a value greater than 300.

 

**Question Four: [2 marks]**

Show that the sequence can be written as 



**Question Five: [4 marks]**

Determine when the value of the sequence  and of the sequence are equivalent.



**Question Six: [5 marks]**

The 4th term of a geometric sequence is 5000 and the 7th term is 5 000 000.

Determine the value of the first term and the common ratio of this sequence.



**Question Seven: [5, 1, 2 = 8 marks]**

The first three terms of a geometric sequence are 

1. Determine the common ratio of this sequence.

 

1. Determine the value of the first term.



1. Hence determine the values of *a* and *b* in the rule defining this sequence: 

 

**Question Eight: [3, 2 = 5 marks]**

The first three terms of a geometric series are 

1. Determine the first three terms of the sequence.

 

1. Explain whether will be positive or negative.

Positive, the odd terms are positive and the even are negative.