

# Limiting Values of Sequences

Revise this topic →



← Check your work

This booklet features original exam style questions designed by me. They do not feature in past papers but are good practice for your exams.

The content is designed to reflect the style of the **AQA Level 2 Certificate in Further Maths**.  
It may not be suitable for other courses.



Answer **all** questions in the spaces provided.

Do not write  
outside the  
box

1 The  $n$ th term of a sequence is  $\frac{2n - 3}{n + 4}$

1 (a) A term in the sequence has the value  $\frac{3}{2}$

Work out the value of  $n$ .

[2 marks]

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Answer \_\_\_\_\_

1 (b) Write down the limiting value of the sequence as  $n \rightarrow \infty$

[1 mark]

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Answer \_\_\_\_\_





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2 The  $n$ th term of a sequence is  $\frac{7n}{10n + 6}$

2 (a) A term in the sequence has the value  $\frac{2}{3}$

Work out the value of  $n$ .

[2 marks]

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Answer \_\_\_\_\_

2 (b) Write down the limiting value of the sequence as  $n \rightarrow \infty$

[1 mark]

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Answer \_\_\_\_\_

$\frac{1}{6}$

Turn over ►





3 The  $n$ th term of a sequence is  $\frac{14n - 21}{4n}$

3 (a) The  $k^{\text{th}}$  term of the sequence is the first term that has a value greater than 3.

Work out the value of  $k$ .

[2 marks]

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$k =$  \_\_\_\_\_

3 (b) Write down the limiting value of the sequence as  $n \rightarrow \infty$

[1 mark]

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Answer \_\_\_\_\_





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4 The  $n$ th term of a sequence is  $\frac{50 - 6n}{3n}$

4 (a) The  $k^{\text{th}}$  term of the sequence is the first negative term.

Work out the value of  $k$ .

[2 marks]

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$k =$  \_\_\_\_\_

4 (b) Write down the limiting value of the sequence as  $n \rightarrow \infty$

[1 mark]

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Answer \_\_\_\_\_

$\frac{1}{6}$

Turn over ►





5 The  $n$ th term of a sequence is  $\frac{n^2 + 20}{3n^2}$

5 (a) A term in the sequence has the value  $\frac{2}{5}$

Work out the value of  $n$ .

[2 marks]

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Answer \_\_\_\_\_

5 (b) Write down the limiting value of the sequence as  $n \rightarrow \infty$

[1 mark]

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Answer \_\_\_\_\_





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6 The  $n$ th term of a sequence is  $\frac{4n^2 + 45}{5n^2 - 30}$

6 (a) A term in the sequence has the value 0.9

Work out the value of  $n$ .

[2 marks]

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Answer \_\_\_\_\_

6 (b) Write down the limiting value of the sequence as  $n \rightarrow \infty$

[1 mark]

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Answer \_\_\_\_\_

$\frac{\quad}{6}$

Turn over ►





7 The  $n$ th term of a sequence is  $\frac{2n^2}{3n^2 - 9}$

7 (a) Show that the difference between the first two terms of the sequence is 3. [3 marks]

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7 (b) Write down the limiting value of the sequence as  $n \rightarrow \infty$  [1 mark]

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Answer \_\_\_\_\_







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8 The  $n$ th term of a sequence is  $\frac{20 - 6n^2}{an^2 + 35}$

8 (a) The limiting value of the sequence as  $n \rightarrow \infty$  is equal to  $-\frac{2}{3}$

Write down the value of  $a$ .

[1 mark]

$a =$  \_\_\_\_\_

8 (b) A term in the sequence has the value -0.5

Work out the value of  $n$ .

[3 marks]

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Answer \_\_\_\_\_

Turn over ►





Do not write  
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9 The  $n$ th term of a sequence is  $\frac{4n^2 + 6}{3n^2 + 2n}$

9 (a) Two terms in the sequence have the value  $\frac{5}{4}$

Work out the both possible values of  $n$ .

[4 marks]

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Answer \_\_\_\_\_

9 (b) Write down the limiting value of the sequence as  $n \rightarrow \infty$

[1 mark]

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Answer \_\_\_\_\_





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10 The  $n$ th term of a sequence is  $\frac{3n + 3}{2n - 1} - \frac{2n^2 + n}{3n^2 - 8}$

10 (a) Work out the value of the second term of the sequence [2 marks]

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Answer \_\_\_\_\_

10 (b) Work out the limiting value of the sequence as  $n \rightarrow \infty$  [3 marks]

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Answer \_\_\_\_\_