

Sequences

Monday, 18 March 2019 5:48 pm

★ By the end of the lesson I would hope that you have an understanding and be able to apply to questions the following concepts:

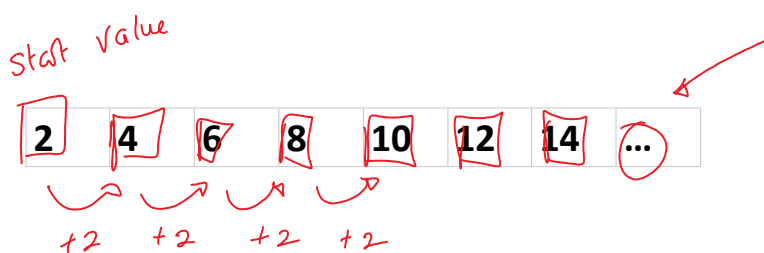
- Know what a sequence is
- Know how to create a sequence
- Know what the key language is when describing sequences:
 - Term
 - Start value
 - Rule
- Know how to use the CAS to find the terms of sequences when we know the rule

RECAP:

This is the start of a new section and, as such, there isn't a recap. However, you have been working with sequences since you can count!

The most basic of sequences

Let's look at the one sequence we all know:



$$\begin{array}{l} \boxed{6} \quad 8 \quad 10 \quad 12 \quad 14 \\ \boxed{10} \quad -8 \quad -6 \quad -4 \quad -2 \\ \boxed{0} \quad 2 \quad 4 \quad 6 \quad 8 \quad 10 \dots \end{array}$$

The **start value** is the number we start the sequence from.

Remember: Sequences can start from any number. They can even be negative numbers!

A **term** is a number in a sequence

The rule is a mathematical description of how to go from one **term** to the next **term**.

The number of terms in a sequence can vary. When it goes to infinity and beyond we use the '...'

Examples:

Extracted from the *Cambridge Further Mathematics Units 3 and 4 Textbook Series*

Example 1:

Write down the first five terms of the sequence with a starting value of 6 and the rule 'add 4 to each term'.

$$6 \quad \underline{10} \quad \underline{14} \quad \underline{18} \quad \underline{22}$$

Example 2:

Write down the first five terms of the sequence with a starting value of 5 and the rule 'double the number and then subtract 3'.

5 7 11 19 35
— — — — —

Using the CAS to find the numbers in a sequence

Using the CAS is really easy.

It's simply a case of entering the **start value** and then the rule and pressing EXE a number of times!

Example 3:

Use a calculator to generate the first five terms of the sequence with a starting value of 5 and the rule 'double and then subtract 3'.