I. Reviewed Web Page & Syllabus.

Then we went around the room twice - first defining an arithmetic sequence, next defining a geometric sequence.

We started in the book with \( Z \)

II. Ch 11. Sect 11.1. p. 822. SEQUENCES

A. Def.

A sequence is a row of numbers or list.

and the order is important.

The generic list looks like this

\[ a_1, a_2, a_3, \ldots, a_n, \ldots \]

\[ \uparrow \]

first term

\[ 1 \text{n-th term} \]

B. Example

\[ 2, 5, 8, 11, 14, 17, 20, \ldots \]

\[ \sqrt{\sqrt{\sqrt{\sqrt{}}} \text{ etc.}} \]

common difference = 3

Call \( a = a_1 \), the first term, \( d = \) common diff.

\[ a = a_1 = 2 \]

\[ a_2 = 2 + 3 \]

\[ a_3 = (2+3) + 3 = 2 + 2 \cdot 3 \]

\[ a_4 = ((2+3)+3) + 3 = 2 + 3 \cdot 3 \]

\[ \vdots \]

\[ a_n = 2 + (n-1)3 \]

\[ a_{100} = 2 + 99 \cdot 3 = 2 + 297 = 299 \]

So the 100th term of our arithmetic sequence is 299.
The FORMULA!

Basic Formula for the \( n \)-th term of an Arithmetic Sequence is

\[ a_n = a + (n-i)d \]

II AFTER CLASS. // Some Examples of AS's (Arithmetic Sequences).

A Suppose \( a_n = 5 + (n-1)(-1) \). Then the sequence looks like this:

\[ 5, 4, 3, 2, 1, 0, -1, -2, \ldots \]

B By the way, the formula \( a_n = 5 + (n-1)(-1) \) which clearly identifies \( a \) (\( a_1 = 5 \)) and \( d \) (\( d = -1 \)) is often re-written as

\[ a_n = 5 + (n-1)(-1) = 5 - n + 1 = 6 - n \]

\[ a_n = 6 - n \]

which, of course, generates the same AS but conceals the true nature of \( a \) and \( d \).

C Suppose \( a_n = 5 + (n-1)7 \) or \( a_n = 7n - 2 \). Then the AS is:

\[ 5, 12, 19, 26, \ldots \]

D Suppose \( a_n = -2 + (n-1)4 \) or \( a_n = 4n - 6 \).

\[ -2, 2, 6, 10, \ldots \]