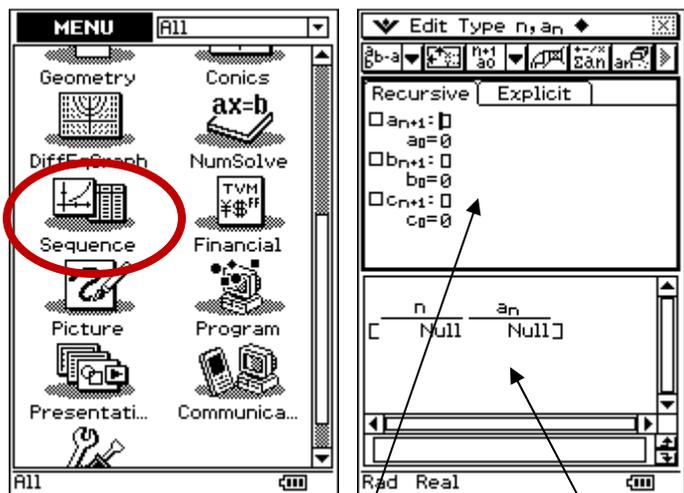


# Determining the general term of a recursion expression on the ClassPad 330A+.

This resource was written by Derek Smith with the support of CASIO New Zealand. It may be freely distributed but remains the intellectual property of the author and CASIO.

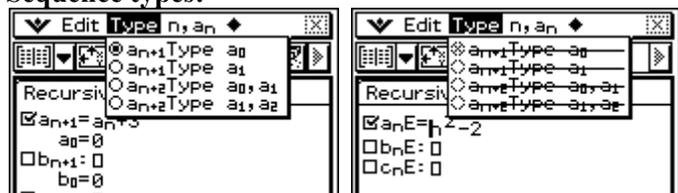
The application window called 'Sequence' can deal with:

- an arithmetic sequence
- a geometric sequence
- a progression of a difference table
- creates sequences like Fibonacci for example.



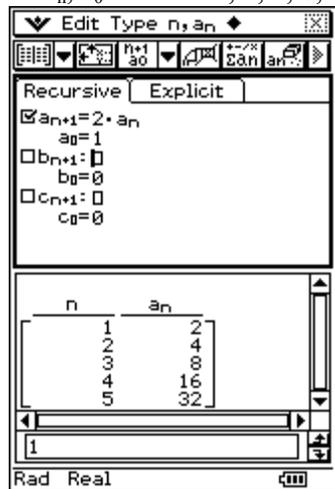
The default screen is the **Sequence Editor** and **Table** windows, as shown above.

## Sequence types:



An example is illustrated below for the Recursive window:

$$\langle 2a_n, a_0 = 1 \rangle = \langle 1, 2, 4, 8, 16, \dots \rangle$$

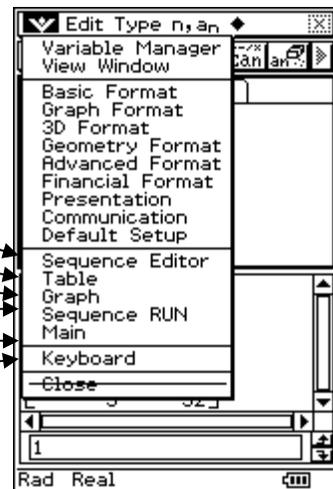


**To Do.** Generate the following sequences:

- $\langle 2a_n, a_0 = 2.5 \rangle$
- $\langle a_n + 1, a_0 = 3 \rangle$
- $\langle 3a_n + 4, a_0 = -3 \rangle$
- $\langle a_n - 2, a_0 = 5 \rangle$
- $\langle \frac{1}{2}a_n, a_0 = 20 \rangle$

The  icon displays the menus available.

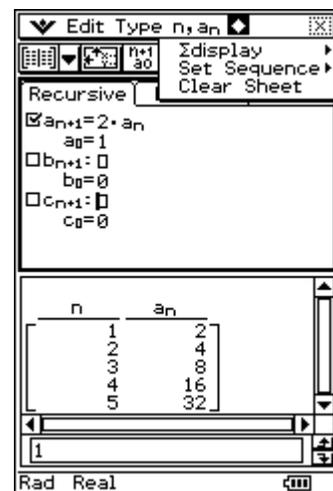
- Sequence editor
- Table window
- Graph window
- Sequence RUN
- Start in the Main application
- Display the soft Keyboard



Using the [♦] you can display partial sums on or off. The default is OFF.

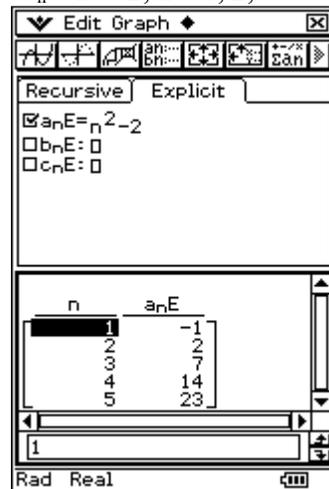
After displaying a graph turn the display of generated expressions on or off. The default is ON.

Clear sheet deletes the entries in the **Recursive** or **Explicit** window.



An example is illustrated below for the **Explicit** window:

$$\langle a_n = n^2 - 2, n = 1, 2, \dots \rangle = \langle -1, 2, 7, 14, \dots \rangle$$

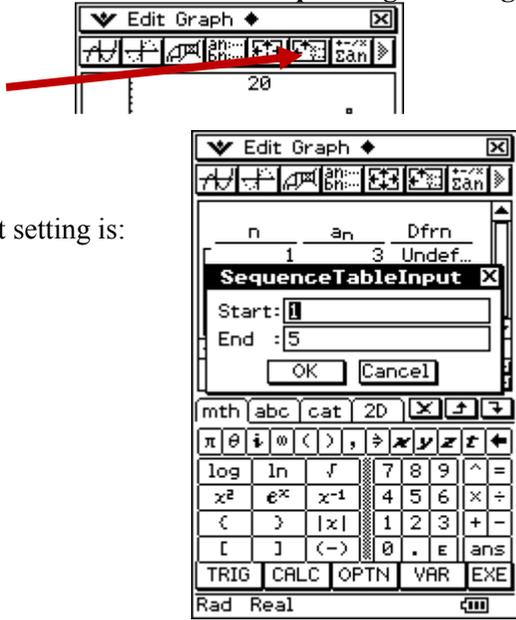


**To Do.** Generate the following sequences:

- $\langle 2n - 9, n = 1, 2, \dots \rangle$
- $\langle n^2 + n - 1 + 1, n = 1, 2, \dots \rangle$

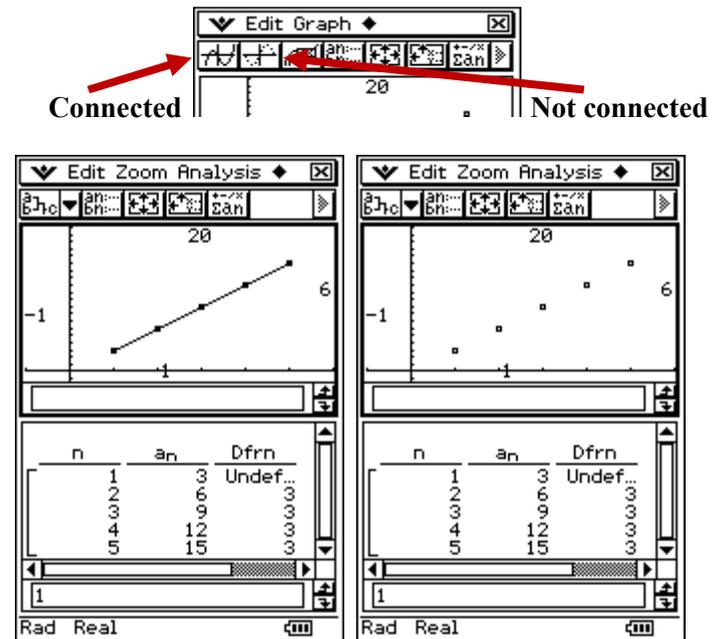
- $\langle 3n - n^3, n = 1, 2, \dots \rangle$
- $\langle (n - 2)/n, n = 1, 2, \dots \rangle$
- $\langle \frac{1}{2}(n^2 + n), n = 1, 2, \dots \rangle$

**Setting the start and end of the sequence generating.**

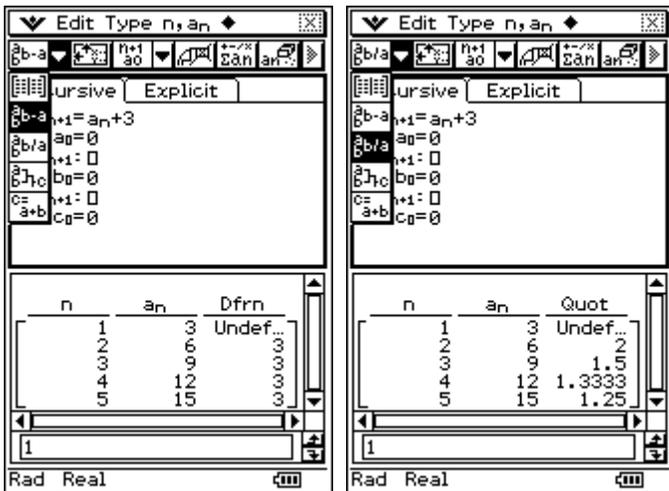


The default setting is:  
**Start:** 1  
**End:** 5

**Graphing or plotting the sequence.**



**Difference and Quotient columns.**



**Note:**

Make sure that the **View Window** is appropriately set.



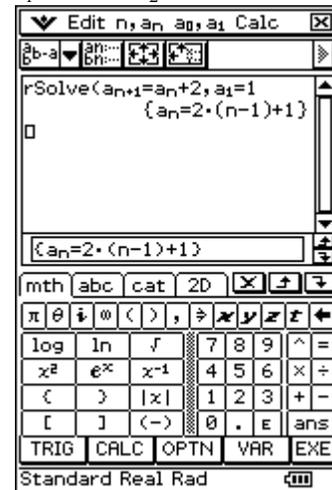
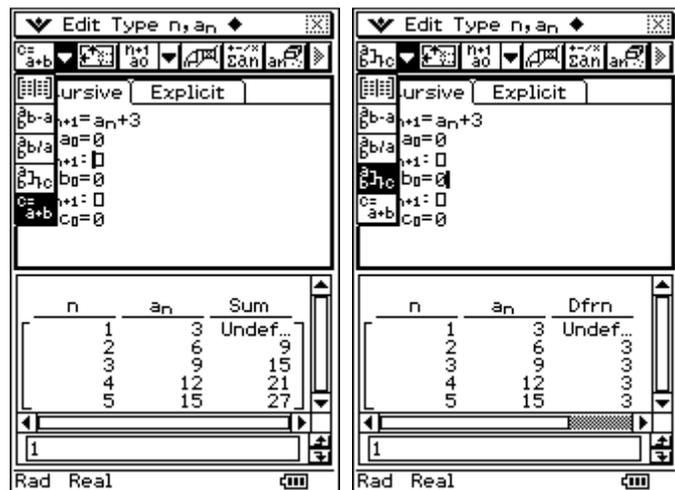
**Use of rSolve().**

**rSolve()** returns the explicit formula of a sequence that is defined in relation to one or two previous terms or a system of recursive formulas.

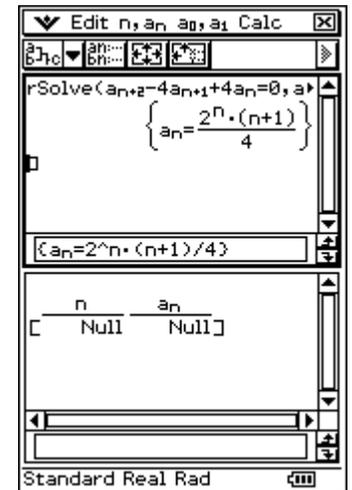
In example A below,  $\langle a_n + 2, a_1 = 1 \rangle = \langle 1, 3, 5, 7, 9, \dots \rangle$  is rewritten as,  $a_n = 2 \times (n - 1) + 1$ .

In example B below, obtaining the  $n^{\text{th}}$  term of  $a_{n+2} = 4a_{n+1} - 4a_n$ ,  $a_1 = 1$  and  $a_2 = 3$ .

**Sums 2 terms and difference of 2 terms.**



**Example A**



**Example B**

For further tips, more helpful information and software support visit our websites

[www.monacocorp.co.nz/casio](http://www.monacocorp.co.nz/casio) or <http://graphic-technologies.co.nz>