Using a TI-83/84 for Sequences and Series

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Sequences

First tell your calculator that you are working with sequences: [MODE] then select Seq from the "Func Par Pol Seq" set of choices and select Dot from the "Connected Dot" set one line further down. Press [QUIT] to return to the main screen.

Press [2nd] [MODE] to get [QUIT]

A explicitly given sequence

To plot first few terms of the sequence $\{\frac{n+2}{n-1}\}_{n=2}^{\infty}$, press [$Y=$]. Then set nMin to 2, $u(n)$ to $(n+2)/(n-1)$, and clear the $u(n\text{Min})$ entry. (If you fail to clear $u(n\text{Min})$, the first few points of your graph may be wrong.) You can now plot the sequence by pressing [GRAPH]. You can adjust the plotting window though [WINDOW] and [ZOOM] as usual. For example, under [WINDOW],

Press [X,T,θ,n] to get n

nMin	$= 2$	Your sequence begins with a_2
nMax	$= 20$	Your sequence ends with a_{20}
PlotStart	$= 1$	Your plot begins with the first term, a_2
PlotStep	$= 1$	
Xmin	$= 0$	
Xmax	$= 20$	
Xscl	$= 1$	
Ymin	$= 0$	
Ymax	$= 2$	
Yscl	$= 1$	

Xmin is set to 0 above to draw the y-axis even if the sequence is drawn only from $n = 2$.

A recursively given sequence

Consider the sequence given by $a_n = a_{n-1} + \frac{5}{n}$ for $n > 0$ and $a_0 = 1$. Again press [$Y=$] and set nMin to 0, $u(n)$ to $u(n-1) + 5/n$,and $u(n\text{Min})$ to 0. Again, you can change the [WINDOW] settings:

Press [2nd] [7] to get the function u. This is different from [ALPHA] [5] which gives the number U

nMin	=	0		nMin	= 0
nMax	=	20		nMax	= 40
PlotStart	=	1		PlotStart	= 16
PlotStep	=	1		PlotStep	= 1
Xmin	=	0		Xmin	= 0
Xmax	=	20	or	Xmax	= 40
Xscl	=	1		Xscl	= 1
Ymin	=	0		Ymin	= 15
Ymax	=	20		Ymax	= 25
Yscl	=	1		Yscl	= 1

Changing nMin yields a completely different sequence! Change PlotStart to begin the plot later in the sequence. With the left-hand settings you get $a_0, \ldots, a_{20}$. Since a_{15} is the 16th term of this sequence, the right-hand settings give you $a_{15}, \ldots, a_{40}$.

If your recursive sequence needs more than one seed value, give $u(n\text{Min})$ as a list. For example, if $a_n = a_{n-1} + a_{n-2}$, $a_0 = 0$, and $a_1 = 1$, then under $\boxed{Y=}$ set nMin to 0, $u(n)$ to $u(n-1) + u(n-2)$, and $u(n\text{Min})$ to $\{0, 1\}$. Press $\boxed{\text{2nd}}$ $\boxed{(}$ to get {

Series

Note that is $u(n) = \sum_{k=1}^{n} a_k$, then $u(n) = u(n-1) + a_n$, so you can plot partial sums in the same manner as recursively given sequences above.

For example, to plot the partial sums of $\sum_{k=0}^{\infty} \frac{2^k}{k!}$, press $\boxed{Y=}$ and set nMin to 0, $u(n)$ to $u(n-1) + 2^n/n!$, and $u(n\text{Min})$ to $2^0/0!$. Then use $\boxed{\text{WINDOW}}$ settings like

nMin	=	0
nMax	=	10
PlotStart	=	1
PlotStep	=	1
Xmin	=	0
Xmax	=	10
Xscl	=	1
Ymin	=	0
Ymax	=	10
Yscl	=	1

to see the partial sums level off towards $e^2 \approx 7.39$.