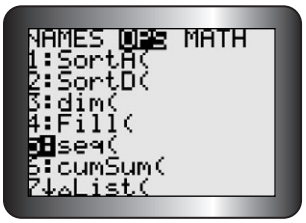
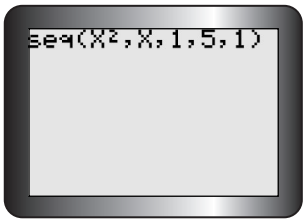
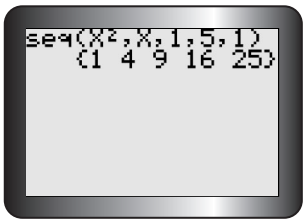


step 1



step 2



step 3

B–16 Generating the Terms of a Sequence

Generate or list the first five terms of the sequence defined by $t_n = n^2$.

1. **Select sequence from the List OPS menu.**

   Press [2nd] [STAT] [▶]. Scroll down to sequence and press [ENTER].

2. **Enter the information for sequence.**
   You will need to enter the following:
   - the expression of the general term
   - the variable n — let [X, T, Θ, n] represent n
   - the first position number
   - the last position number
   - the increment — the increment is 1, because the difference between each pair of consecutive natural numbers is always 1

   Press [X, T, Θ, n] [x^2] [,] [X, T, Θ, n] [,] [1] [,] [5] [,] [1] [)].

3. **Generate the first five terms of the sequence.**

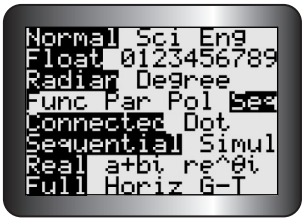
   Press [ENTER].

B–17 Graphing Sequences

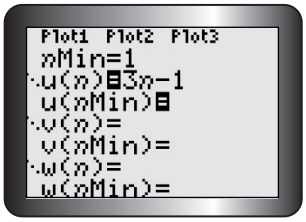
Part 1: Creating a Table and Graphing — The General Term

Using the TI-83 or TI-84 Plus calculator, you can first create a table for a sequence and then a graph for the sequence. You will need the general term.

Create and graph the sequence defined by $t_n = 3n - 1$.



step 1



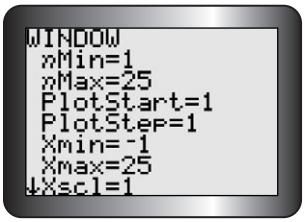
step 2

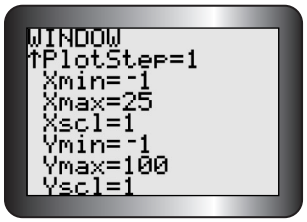
1. **Change the graphing mode from function to sequence.**
   The graphing modes are listed on the fourth line of the MODE menu. Press [MODE] and scroll down and across to **Seq**. Press [ENTER].

2. **Enter the general term into the sequence editor.**
   Press [Y=]. In this editor, ***u*(*n*)**, ***v*(*n*)**, and ***w*(*n*)** represent the general terms of sequences. You can change the minimum value of n (**nMin**). In most cases, you will not need to change the value 1, because, when $n = 1$, the first term is generated. Scroll down to ***u*(*n*)** and position the cursor to the right of the equal sign. Press [3] [X, T, Θ, n] [−] [1].

3. **Adjust the window to display the required number of terms.**

Press WINDOW. The setting ***n*Min** indicates the smallest *n*-value for the calculator to evaluate, while ***n*Max** indicates the largest *n*-value for the calculator to evaluate. **PlotStart=1** means that the graph starts at the first term. **PlotStep=1** means that each consecutive term will be plotted. You can change these settings, but use these window settings for this example.

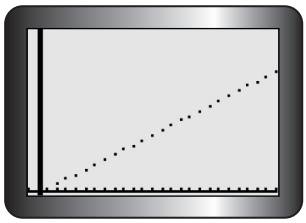




step 3

4. **Graph the sequence.**

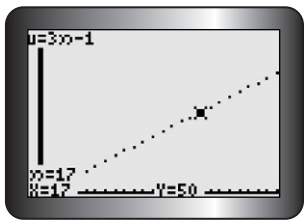
Press GRAPH.



step 4

5. **Trace along the graph to identify specific terms of the sequence.**

Press TRACE. Use ◀ and ▶ to move from point to point. The *n*-value, or position, and the *x*- and *y*-coordinates of each term are displayed at each point. The *y*-coordinate represents the value of the term.

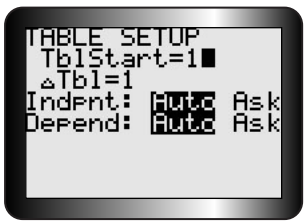


step 5

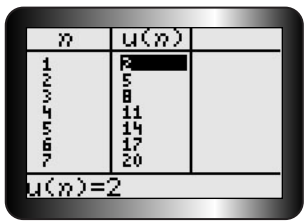
6. **View the terms of the sequence in a table.**

a) Press 2nd WINDOW. Set **TblStart** to 1 and **ΔTbl** to 1.

b) Press 2nd GRAPH to display the table. Use the cursor keys to scroll through the table.



step 6 a)



step 6 b)

Note: To see the graph and the table at the same time, use split-screen mode.

Press MODE, then scroll down and across to G–T (on the last line of the MODE menu). Press ENTER GRAPH.

Part 2: Creating a Table and Graphing — The Recursive Formula

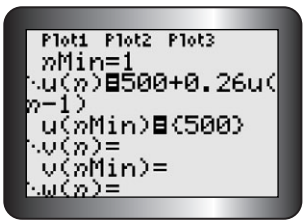
Using the TI-83 Plus or TI-84 calculator, you can graph recursive sequences in the same way, with one exception: you must specify an initial value or values for **u(*n*Min)** in the sequence editor.

Graph the sequence $t_1 = 500$, $t_n = 500 + 0.26t_{n-1}$.

1. **Enter the recursive formula in the sequence editor and set the initial value.**

   Press [Y=]. Then, for the sequence **u(*n*)**, press [5] [0] [0] [+] [0] [.] [2] [6] [2nd] [7] [(] [X, T, Θ, n] [−] [1] [)].

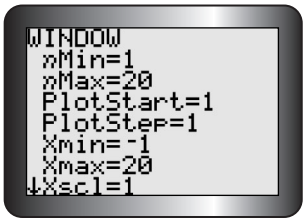
   Set the initial value to 500. Position the cursor to the right of the equal sign for **u(*n*Min)** and press [2nd] [(] [5] [0] [0] [2nd] [)] [ENTER].

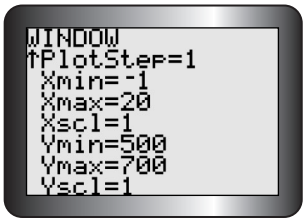
   

   Note: You do not have to enter the braces ([2nd] [(] and [2nd] [)]) around the initial value, or the first term. However, if you were to enter, for example, $t^1 = 0$ and $t^2 = 1$, then you would press [2nd] [(] [1] [,] [0] [2nd] [)] [ENTER].

2. **Set the window.**

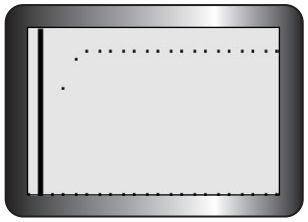
   Press [WINDOW] and enter the values shown.

3. Draw the graph.

Press GRAPH.



4. View the terms of the sequence in a table.

Press 2nd WINDOW. Set **TblStart** to 1 and **ΔTbl** to 1.

Press 2nd GRAPH to display the table. Use the cursor keys to scroll through the table.