

TI-83 Plus Calculator: Finding the Sum and the Cumulative Sum of a Series

2.6



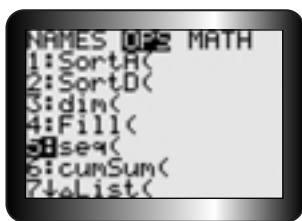
In Chapter 1, you learned how to create the terms of a sequence using the TI-83 Plus calculator given the general term of the sequence. You can also find the sum of the terms of this sequence — the series — using the TI-83 Plus calculator.

Find the sum and the cumulative sum of the first five terms of the sequence defined by $t_n = n^2$.

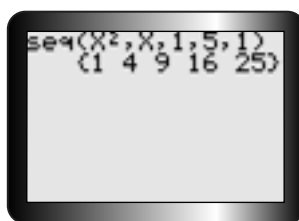
Part 1: Finding the Sum of the Terms of a Series

1. Generate the first five terms of the sequence.

- Select **sequence** from the List OPS menu. Press **[2nd]** **[STAT]** **[▶]**. Scroll down to **5:seq** and press **[ENTER]**.
- Enter the expression of the general term, the variable, the starting value of the variable, the ending value of the variable, and the increment, 1. Press **[ENTER]** to generate the first five terms, as shown.



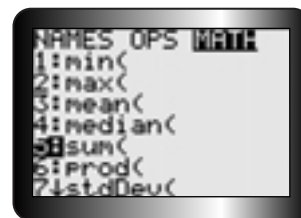
step 1a



step 1b

2. Select sum from the List MATH menu.

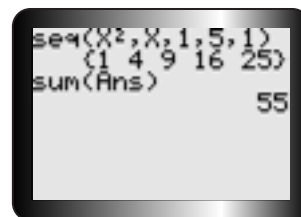
Press **[2nd]** **[STAT]** **[▶]** **[▶]** and scroll down to **5:sum**. Press **[ENTER]**.



step 2

3. Find the sum of the series.

Use **Ans**, last answer, to insert the terms in **sum**. Press **[2nd]** **[(-)]** **[)]** **[ENTER]**. The sum is displayed.



step 3

Part 2: Finding the Cumulative Sum of the Terms of a Series

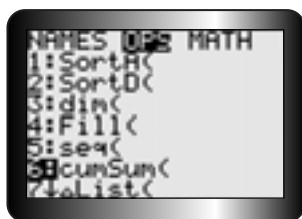
The cumulative sum displays the progression of sums of the terms of a series.

1. Generate the terms of the sequence again.

Follow step 1 of Part 1.

2. Select cumulative sum from the LIST OPS menu.

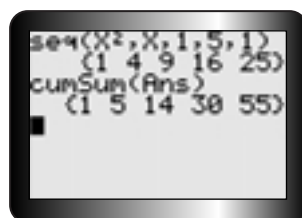
Press $\boxed{2\text{nd}} \boxed{\text{STAT}} \boxed{\blacktriangleright}$ and scroll down to 6:cumSum. Press $\boxed{\text{ENTER}}$.



step 2

3. Find the cumulative sums of the terms of the sequence.

Press $\boxed{2\text{nd}} \boxed{(-)} \boxed{)} \boxed{\text{ENTER}}$. The cumulative sums are displayed.



step 3

$$\left\{ \begin{array}{l} 1 = 1 \\ 5 = 1 + 4 \\ 14 = 1 + 4 + 9 \\ 30 = 1 + 4 + 9 + 16 \\ 55 = 1 + 4 + 9 + 16 + 25 \end{array} \right.$$

Practice 2.6

1. For each of the following sequences, find the sum of the first ten terms.

(a) $t_n = 5n + 1$

(b) $t_n = n^3$

(c) $t_n = 3(2)^{n-1}$

(d) $t_n = -5n + 3$

(e) $t_n = 1000(1.1)^n$

(f) $t_n = n$

(g) $t_n = 100(1.05)^n$

(h) $t_n = 25 + 4(n - 1)$

2. Find the cumulative sums of the first ten terms for each of the sequences in question 1.