EXAMPLE 7 Constructing Sequences

The second and fifth terms of a sequence are 3 and 24, respectively. Find explicit and recursive formulas for the sequence if it is **(a)** arithmetic

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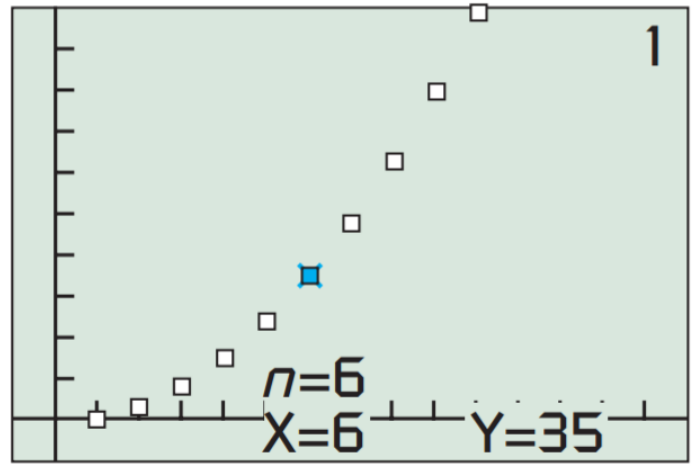
EXAMPLE 8 Graphing a Sequence Defined Explicitly

Produce on a graphing calculator a graph of the sequence $\{a_k\}$ in which $a_k = k^2 - 1$.

Method 1 (Scatter Plot)

The command seq(K, K, 1, 10) $\rightarrow$ L_1 puts the first 10 natural numbers in list L_1.

The command $L_1^2 - 1 \rightarrow L_2$ puts the corresponding terms of the sequence in list L_2.



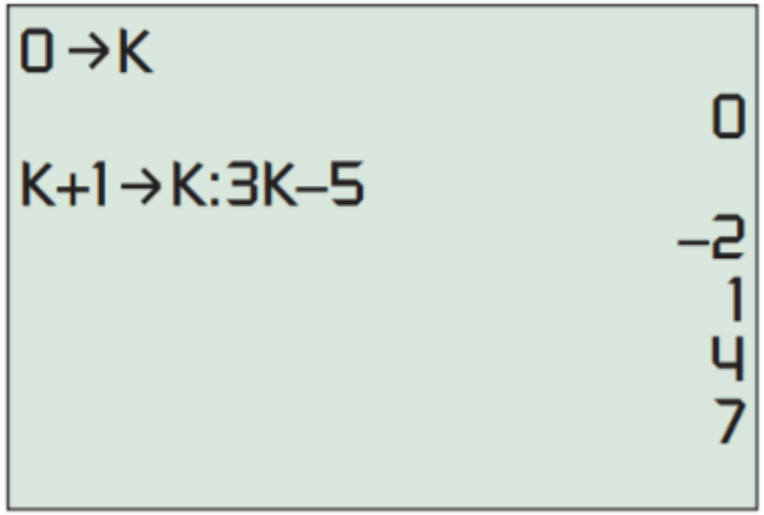
[–1, 15] by [–10, 100]

Method 2 (Sequence Mode)

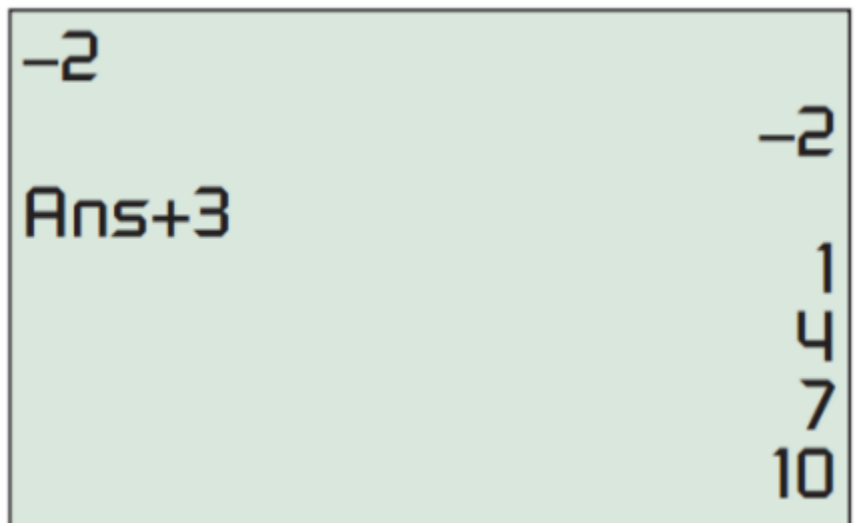
EXAMPLE 9 Generating a Sequence with a Calculator

Using a graphing calculator, generate the specific terms of the following sequences:

(a) (Explicit) $a_k = 3k - 5$ for $k = 1, 2, 3, \ldots$



(b) (Recursive) $a_1 = -2$ and $a_n = a_{n-1} + 3$ for $n = 2, 3, 4, \ldots$



The Fibonacci Sequence

The Fibonacci sequence can be defined recursively by

$$a_1 = 1$$

$$a_2 = 1$$

$$a_n = a_{n-2} + a_{n-1}$$

for all positive integers $n \geq 3$.