Sequences

Exercise 1. Wolfram Alpha allows ”guessing” the n-th term of the sequence based on the first few terms. Try out the following commands:

5, 14, 23, 32, 41, ...
1, 4, 9, 16, 25, ...
1, 2, 3, 2, 1, 2, 3, 2, 1, ...
1, 0.5, 0.25, 0.125, …

Exercise 2. Check, if Wolfram Alpha recognizes the sequence

$$\sqrt{5},\ \frac{\sqrt{5}}{\sqrt{5}-2},\ \frac{5+2\sqrt{5}}{\sqrt{5}-2}$$

as geometric. *(it shouldn’t, three terms do not provide enough information)*

Exercise 3. Now try out commands that sum up the first few terms of a sequence:

1+2+3+...+10
3+12+27+...+300
1/2 + 1/4 + 1/8 + 1/16 + ...
2 * 4 * 6 * ... * 36

Exercise 4. Find the general term of the recurrent sequence. Input the command:

g(n+1)=2+g(n), g(0)=10

Look for the answer in *Recurrence equation solution*.