

Recurrence Relations

Work in Progress: Write definition, check grammar, is Fib correct? How to mark the “solution” part? Rewrite normally the “solution” part. Mb is it possible to deal with russian? Make arrows for **solve** etc.

Example: Fibonacci’s numbers is a recurrence relation where each number is the sum of the two preceding and the first two are 0 and 1:

$$\begin{cases} F_n = F_{n-1} + F_{n-2} \\ F_0 = 0 \\ F_1 = 1 \end{cases}$$

$$a_n = a_{n-1} + 5$$

arrowsoolve???

The solution of a recurrence is the *closed-form expression* of the n^{th} member of the recurrence based on the first, so the calculation may be done in $O(1)$, not in $O(n)$.

arrowmethods

Methods

1. Guessing method.
2. Telescoping method.
3. Iteration method.
4. Characteristic equation.