



Fibonacci numbers

Recursive definition:

$$F_n = \begin{cases} 0 & \text{if } n = 0; \\ 1 & \text{if } n = 1; \\ F_{n-1} + F_{n-2} & \text{if } n \geq 2. \end{cases}$$

0 1 1 2 3 5 8 13 21 34 ...

Naive recursive algorithm: $\Omega(\phi^n)$
(exponential time), where $\phi = (1 + \sqrt{5})/2$
is the *golden ratio*.