

Fibonacci's recursion:

$$F_0 = 0, F_1 = 1, F_n = F_{n-1} + F_{n-2} \quad \text{for } n \geq 2$$

$$F_n = \frac{1}{\sqrt{5}} \left(\underbrace{\left(\frac{1+\sqrt{5}}{2} \right)^n}_{1.618} - \underbrace{\left(\frac{1-\sqrt{5}}{2} \right)^n}_{1.618} \right)$$