

A¹B₁P₁W₁
J. *et al.* f. B. **M**11012 a. E. *et al.*
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and af $\neq 0, 1 \leq a \leq n, f \neq a, a_1, a_2, \dots, a_n$
and $a_1 + a_2 + \dots + a_n = f$, $a_1 \geq a_2 \geq \dots \geq a_n$; $1 = 0+1;$
 $2 = 1+1; 3 = 1+2; \dots, j$

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a₁, ..., a_n ∈ A

$f_{\text{Fac}}(i) \approx \frac{a_i}{a_1} \approx \frac{\alpha}{\lambda^i}$. This is equivalent to $\log(f_{\text{Fac}}(i)) = \log(\alpha) - i \log(\lambda)$, which is a linear relationship between $\log(f_{\text{Fac}}(i))$ and i .

For the first few values of i , $\log(f_{\text{Fac}}(i)) \approx \log[D_m/D_0] - i \log(\lambda)$. For small i , $\log(f_{\text{Fac}}(i))$ is approximately constant, while for larger i , it decreases linearly. The slope of the linear fit is -0.37 ± 0.40 . This is a reasonable value given that $\alpha \approx 1.618$, while $\lambda \approx 1.236$.

We can also calculate $f_{\text{Fac}}(i)$ directly from the definition. The ratio of consecutive terms in the Fibonacci sequence is $\lim_{n \rightarrow \infty} \frac{F_{n+1}}{F_n} = \phi = \frac{1 + \sqrt{5}}{2} \approx 1.618$. Therefore, we have $F_i = \phi^{i-1} F_1$. The ratio of consecutive terms in the sequence of α 's is $\lim_{i \rightarrow \infty} \frac{\alpha_{i+1}}{\alpha_i} = \lambda$. Therefore, we have $\alpha_i = \lambda^{i-1} \alpha_1$. Substituting these expressions into the definition of $f_{\text{Fac}}(i)$, we get

$$f_{\text{Fac}}(i) = \frac{\alpha_i}{\alpha_1} = \frac{\lambda^{i-1} \alpha_1}{\alpha_1} = \lambda^{i-1}.$$

This shows that $f_{\text{Fac}}(i) \approx \lambda^i$ for large i .

- $\mathbb{E}[w_i w_j] = \mathbb{E}[w_i^2] = \mathbb{E}[w_i]$ ($i \neq j$);
- $\mathbb{E}[w_i^2] = (\alpha - 2)$.

If $w_i = \mathbf{B}(t_i) - \mathbf{B}(t_{i-1})$ and $a_i = a_{i-1} + a_i$, then $w_i^2 = a_i^2 + 2a_i w_i + a_{i-1}^2$.
 $a_i = \mathbb{E}[w_i^2] - \mathbb{E}[w_i]^2 = \alpha - 2 + (\alpha - 2)^2 = \alpha - 2 + \alpha^2 - 4\alpha + 4 = \alpha^2 - 3\alpha + 2$.