

$(1, 1, 1, \dots) \leftrightarrow \sum_{\xi=0}^{\infty} x^{\xi} = \frac{1}{1-x} \quad x \in (-1, 1)$
 djigjiv v.f.
 $\leftrightarrow \sum_{\xi=0}^{\infty} \frac{1}{\xi!} x^{\xi} = e^x \quad x \in \mathbb{R}$

~~$\sum_{n=0}^{\infty} a_n x^{n+\xi}$~~ $\sum_{n=0}^{\infty} a_n \frac{1}{n!} x^{n+\xi}$
 $(0, \dots, 0, a_0, a_1, \dots)$ $(0, \dots, 0, a_0 \frac{\xi!}{\xi!}, a_1 \frac{\xi!}{(\xi-1)!}, \dots, a_{(\xi-1)} \frac{\xi!}{1!})$

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$F_0 = 0, F_1 = 1$
 $F_{n+2} = F_{n+1} + F_n$

$\lambda^2 - \lambda - 1 = 0$
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 $\lambda_1, \lambda_2 =$

$F(x) = \sum F_n x^n$
 $x^2 F(x) + x F(x) = F(x)$
 $x^2 F(x) + x F(x) - F(x) \leftrightarrow (-F_0, -F_1 + F_0, 0, 0, \dots)$
 $+ (1 - x - x^2) F(x) = 1 + x$
 $F(x) = \frac{x}{1-x-x^2}$

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$x^2 + x - 1$ $x_{1,2} = \frac{-1 \pm \sqrt{1+4}}{2} = \frac{-1 \pm \sqrt{5}}{2}$

$\frac{1}{1-x} = 1 + x + x^2 + \dots \leftrightarrow (1, \dots)$
 $\frac{1}{1-x} = 1 + \lambda x + \lambda^2 x + \lambda^3 x + \dots \leftrightarrow (\lambda^0, \lambda^1, \lambda^2, \dots)$
 $\frac{A}{x-x_1} = \frac{-A \lambda_1}{1 - \frac{A}{\lambda_1} x}$ $F_0 = 7 \quad F_1 = 9$

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$y_{n+1} = a_n y_n + a_{n-1} y_{n-1} + \dots + a_{n-k+1} y_{n-k+1} + b_n$
 $x^2 F(x) = a_1 x^{k-1} F(x) + \dots + a_{n-k+1} F(x) + G(x)$
+ opas xaitel

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$a_n = 5a_{n-1} - 6a_{n-2}$ $a_0 = 0 \quad a_1 = 1$
 $A(x) = \sum a_n x^n$

① $a_n = 5a_{n-1} - 6a_{n-2} + [n=0] \cdot 0 + [n=1] \cdot 1$
 ② $A(x) = 5x A(x) - 6x^2 A(x) + 0 \cdot x^0 + 1 \cdot x^1$
 ③ $A(x)(1-5x+6x^2) = x$
 $A(x) = \frac{x}{1-5x+6x^2}$ $\text{sig } \frac{1}{2}, \frac{1}{3}$
 ruzid: $\frac{a}{1-5x} + \frac{b}{1-2x} = \frac{x}{1-5x+6x^2}$ $A(x) = \frac{1}{1-5x} - \frac{1}{1-2x}$
 $(1-2x)a + (1-5x)b = x$
 $x^0: a+b=0 \Rightarrow b=-1$
 $x^1: -2a-3b=1 \Rightarrow a=0$ $a_4 = 3^4 - 2^4$

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$a_0 = a_1 = 1$ $a_n = a_{n-1} + 2a_{n-2} + (-1)^n$
 $A(x) = \sum a_n x^n$

① $a_n = a_{n-1} + 2a_{n-2} + [n \geq 0] \cdot (-1)^n + [n=0] \cdot 1$
 ② $A(x) = x A(x) + 2x^2 A(x) + \frac{1}{1+x} + x$
 $A(x)(1-x-2x^2) = \frac{1+x+x^2}{1+x}$
 $A(x) = \frac{1+x+x^2}{(1+x)^2(1-2x)} = \dots = \frac{7}{9} \cdot \frac{1}{1-2x} + \frac{2}{9} (-1)^n + \frac{1}{3} (-1)^n$
 Wldine ve frau
 $\frac{a}{1-2x} + \frac{b}{1+x} + \frac{c}{(1+x)^2}$

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