

4 kroky:

- 1) formule
- 2) vyhledání funkce
- 3) vyhledání funkce
- 4) nornění do mocninné řady

(a_0, a_1, \dots) $\leftarrow a_{-1} = 0$

$a_n = 5a_{n-1} - 6a_{n-2} + [n+1]$

$a_0 = 0$ $a_1 = 1$

$a_n = \sum_{k=0}^n a_k = 0$

$A^2 - 5A + 6 = (A-2)(A-3)$

$C_1 2^n + C_2 3^n$

$F(x) = \sum_{n=0}^{\infty} a_n x^n$

$F(x) = 5x F(x) - 6x^2 F(x) + x$

$F(x)(6x^2 - 5x + 1) = x$

$F(x) = \frac{x}{6x^2 - 5x + 1}$

5 11-14:09

$\frac{x}{6x^2 - 5x + 1} = \frac{A}{x-x_1} + \frac{B}{x-x_2}$

$x_{1,2} = \frac{5 \pm \sqrt{25-24}}{12} = \frac{1}{12}, \frac{1}{3}$

$\frac{x}{6x^2 - 5x + 1} = \frac{a}{1-\frac{1}{12}x} + \frac{b}{1-\frac{1}{3}x}$

$\frac{x}{6x^2 - 5x + 1} = \frac{a}{1-2x} + \frac{b}{1-3x} = \frac{-1}{1-2x} + \frac{1}{1-3x}$

$x = a(1-3x) + b(1-2x)$

$x^0: 0 = a+b$

$x^1: 1 = -3a - 2b = +3b - 2b = b$

$\Rightarrow a_n = 3^n - 2^n$

5 11-14:19

b_0, b_1, b_2, \dots

$\frac{1 - \sqrt{1-4x}}{2x} \stackrel{x \rightarrow 0+}{=} \frac{1}{2} \stackrel{x \rightarrow 0+}{=} \frac{1}{2} + \frac{1}{2}(1-4x)^{-1/2}$

$\binom{1/2}{\xi} = \frac{(1/2)(1/2-1)(1/2-2)\dots(1/2-\xi+1)}{\xi!}$

$= \frac{1}{2\xi} \frac{(-1)^{\xi-1} \dots (-1/2-\xi+2)}{(\xi-1)!}$

5 11-14:32

$(a_0, a_1, a_2, \dots) = \underline{a}$

$(b_0, b_1, b_2, \dots) = \underline{b}$

$\alpha \underline{a} + \beta \underline{b}$

$(\alpha a_0 + \beta b_0, \alpha a_1 + \beta b_1, \dots)$

$(a_0 + a_1 x + a_2 x^2 + \dots) = A(x)$

$(b_0 + b_1 x + b_2 x^2 + \dots) = B(x)$

$\alpha A(x) + \beta B(x)$

$x(a_0 + a_1 x + \dots)$

$\sum a_n x^n dx = \frac{1}{n+1} a_n x^{n+1}$

$\frac{1}{x}(a_1 x + a_2 x^2 + \dots)$

$(a_n x^n)' = n \cdot a_n x^{n-1}$

$(\sum a_n x^n)(\sum b_m x^m) = \sum c_k x^k$

$c_k = \sum_{i=0}^k a_i b_{k-i}$

5 11-15:22

$g_n \leftrightarrow \frac{g_n}{n!} x^n \quad (g_0, g_1, g_2, \dots)$

\downarrow derivace

$\leftrightarrow g_n \frac{n}{n!} x^{n-1} = g_n \frac{1}{(n-1)!} x^{n-1}$

(g_1, g_2, \dots)

\downarrow integrace

$\leftrightarrow \int \frac{g_n}{n!} x^n = \frac{g_n}{(n+1)!} x^{n+1}$

(g_0, g_1, g_2, \dots)

5 11-15:28