Ultraexponentiation, ultraradical, ultralogarithm
Ультрастепень, ультракорень, ультралогарифм

$$x^B - R_0 x^{N_0} - R_1 x^{N_1} - R_2 x^{N_2} \ldots - 1 = 0$$

$$x^B = Rx^N + 1$$

$$R = \frac{x^B - 1}{x^N} = f_{B,N}(x)$$

$$x = arcf_{B,N}(R) = brn_{B,N}(R)$$

$$brn_{B,N}(R) = \sum_{g=0}^{\infty}\left(\frac{R^g}{B^g g!}\prod_{r=1}^{g-1}(-Br + 1 + Ng)\right)$$

$$x = 1 + \frac{R}{B} + \frac{(1 - B + 2N)R^2}{2B^2} + \frac{(1 - B + 3N)(1 - 2B + 3N)R^3}{3!\,B^3} + \frac{(1 - B + 4N)(1 - 2B + 4N)(1 - 3B + 4N)R^4}{4!\,B^4} + \cdots$$

radius of convergence
ряд сходится когда

$$\left|\frac{N^N (B - N)^{B-N} R^B}{B^B}\right| < 1$$

4nom

$$x^B - R_0 x^{N_0} - R_1 x^{N_1} - 1 = 0$$

$$x^B - 1 = R_0 x^{N_0} + R_1 x^{N_1}$$

$$\frac{x^B - 1}{R_0 x^{N_0} + R_1 x^{N_1}} = 1$$

$$S_0 = \frac{R_0}{B} + \frac{\left((1 - B + 2N_0)R_0^2\right)}{2B^2} + \frac{(1 - B + 3N_0)(1 - 2B + 3N_0)R_0^3}{3!\,B^3} + \frac{(1 - B + 4N_0)(1 - 2B + 4N_0)(1 - 3B + 4N_0)R_0^4}{4!\,B^4} + \cdots$$

$$S_1 = \frac{R_1}{B} + \frac{(1 - B + 2N_1)R_1^2}{2B^2} + \frac{(1 - B + 3N_1)(1 - 2B + 3N_1)R_1^3}{3!\,B^3} + \frac{(1 - B + 4N_1)(1 - 2B + 4N_1)(1 - 3B + 4N_1)R_1^4}{4!\,B^4} + \cdots$$

$$S_2 = (1 - B + N_0 + N_1)\frac{R_0}{B}\frac{R_1}{B} + (1 - B + 2N_0 + N_1)(1 - 2B + 2N_0 + N_1)\frac{R_0^2}{2B^2}\frac{R_1}{B} + (1 - B + 3N_0 + N_1)(1 - 2B + 3N_0 + N_1)(1 - 3B + 3N_0 + N_1)\frac{R_0^3}{3!\,B^3}\frac{R_1}{B} + \cdots$$

$$S_3 = (1 - B + N_0 + 2N_1)(1 - 2B + N_0 + 2N_1)\frac{R_0}{B}\frac{R_1^2}{2B^2} + (1 - B + 2N_0 + 2N_1)(1 - 2B + 2N_0 + 2N_1)(1 - 2B + 2N_0 + 2N_1)\frac{R_0^2}{2B^2}\frac{R_1^2}{2B^2} + (1 - B + 3N_0 + 2N_1)(1 - 2B + 3N_0 + 2N_1)(1 - 3B + 3N_0 + 2N_1)(1 - 4B + 3N_0 + 2N_1)\frac{R_0^3}{3!\,B^3}\frac{R_1^2}{2B^2} + \cdots$$

$$S_4 = (1 - B + N_0 + 3N_1)(1 - 2B + N_0 + 3N_1)(1 - 3B + N_0 + 3N_1)\frac{R_0}{B}\frac{R_1^3}{3!\,B^3} + (1 - B + 2N_0 + 3N_1)(1 - 2B + 2N_0 + 3N_1)(1 - 3B + 2N_0 + 3N_1)(1 - 4B + 2N_0 + 3N_1)\frac{R_0^2}{2B^2}\frac{R_1^3}{3!\,B^3} + (1 - B + 3N_0 + 3N_1)(1 - 2B + 3N_0 + 3N_1)(1 - 3B + 3N_0 + 3N_1)(1 - 4B + 3N_0 + 3N_1)(1 - 5B + 3N_0 + 3N_1)\frac{R_0^3}{3!\,B^3}\frac{R_1^3}{3!\,B^3} + \cdots$$

$$x = 1 + S_0 + S_1 + S_2 + S_3 + S_4 + \cdots$$

go beyond the radius of convergence
выйти за пределы радиуса сходимости

$$x^B - Rx^N - 1 = 0$$

1. $\frac{f}{x^N}$

$$x^{B-N} - R - x^{-N} = 0$$

$$x = yk$$

$$y^{B-N} - Ry^{-N} - 1 = 0$$

2. $\frac{f}{x^B}$

$$1 - Rx^{N-B} - x^{-B} = 0$$

$$x = yk$$

$$y^{-B} - Ry^{N-B} - 1 = 0$$

General form
Общий вид

$$Fx^f + Gx^g + Hx^h = 0$$

$$|f| > |g| > |h|$$

$$D = F^{g-h} * G^{h-f} * H^{f-g}, \qquad T = \frac{(g-h)^{g-h} * (f-g)^{f-g}}{(f-h)^{f-h}}$$

$B = f - h$	$v = \left(-\frac{H}{F}\right)^{1/B}$	$N = g - h$	$R = \frac{-G}{Fv^{B-N}}$	Blue	$\|D\| > \|T\|$
$B = f - g$	$v = \left(-\frac{G}{F}\right)^{1/B}$	$N = h - g$	$R = \frac{-H}{Fv^{B-N}}$	Red	$\|D\| \le \|T\|$
$B = g - h$	$v = \left(-\frac{H}{G}\right)^{1/B}$	$N = f - h$	$R = \frac{-F}{Gv^{B-N}}$	Navy	

$$z^{1/B} = e^{\frac{LnZ}{B}}$$

$$x = v * brn_{B,N}(R)$$

$$brn_{B,N}(R) = \sum_{g=0}^{\infty}\left(\frac{R^g}{B^g g!}\prod_{r=1}^{g-1}(-Br + 1 + Ng)\right)$$

$$= 1 + \frac{R}{B} + \frac{(1 - B + 2N)R^2}{2B^2} + \frac{(1 - B + 3N)(1 - 2B + 3N)R^3}{3!\,B^3}$$

$$+ \frac{(1 - B + 4N)(1 - 2B + 4N)(1 - 3B + 4N)R^4}{4!\,B^4} + \cdots$$

$$brn^a{}_{B,N}(R) = brn_{\frac{B}{a},\frac{N}{a}}(R)$$

Galaxy-Plato
Галактика-Платон
http://glax-plato.ru/

Gruzdov A.V.
Berezin S.V.
Berezin A.V.
Berezin P.V.
Ufa, Russia.
2023.06.21.