TaySum/TaySer um 0

$$\frac{1+x}{1-x} = \frac{2}{1-x} - 1 = 2\sum_{n\geqslant 0} x^n - 1 = 1 + 2\sum_{n\geqslant 1} x^n \text{ TaySer/2-Pol um } x=0$$

$$\frac{1}{(1-x)^2} = -\frac{d}{dx}\frac{1}{1-x}$$

Taylor-Reihe um 0/ erste 5 Terms/Konv-Int/Rad

$$\frac{1}{1-x^2}: \quad \frac{1}{1-x^k}: \quad \frac{1}{(1-x)^3}: \quad \frac{x^5}{(2x+1)^2}: \quad \frac{1}{(1+x)^k}: \quad \frac{x}{1-3x^2}$$

$$\frac{\sin 2x^3}{x^2}: \quad e^{x^2/2}: \quad \sin x - \cos x$$

$${}^{y}\overset{-1}{\tanh}: \quad {}^{y}\overset{-1}{\sin}$$

$${}^{x}\text{ɿ} = \frac{1}{x} \text{ TayPol/TayReihe um } a=1 \text{ einheitliche Formel for hohere Abl } {}^{1}_{k-}\text{ɿ}: \quad k\geqslant 1$$

Konv-Rad/Intval/Endpunkte/Reihenwert

$$\sum_{n\geqslant 0}\begin{bmatrix} n+2 \\ 2\end{bmatrix} x^n: \quad \sum_{n\geqslant 1}\frac{n}{2^n}x^n$$

$$\ulcorner x \urcorner < 1: \quad \sum_{n\geqslant 1} n\,x^n: \quad \sum_{n\geqslant 2}\begin{bmatrix} n \\ 2\end{bmatrix} x^n: \quad \sum_{n\geqslant k}\begin{bmatrix} n \\ k\end{bmatrix} x^n \text{ Ableitung einer Potenzreihe}$$

$$\sum_{n\geqslant 1}\frac{(-1)^n}{n}x^{2n+1}: \quad \sum_{n\geqslant 1} n^2\,x^n: \quad \sum_{n\geqslant 0}\underbrace{1+(-1)^n}\,x^n$$

$$\ulcorner x \urcorner < 1: \quad \sum_{n\geqslant 0}\begin{bmatrix} \alpha \\ n\end{bmatrix} x^n = (1+x)^\alpha$$

$$\frac{d}{dx}\frac{\sum_{n\geqslant 0}\begin{bmatrix} \alpha \\ n\end{bmatrix} x^n}{(1+x)^\alpha} = 0$$

$$\begin{cases} \mathbb{R} \xrightarrow[n \text{ diff}]{\text{ɿ}} \mathbb{R} \\ {}_{n-}\text{ɿ} = 0 \end{cases} \Rightarrow \begin{cases} \text{ɿ} \in \mathbb{R}[x] \\ \deg \text{ɿ} < n \end{cases}$$

$$\mathbb{R} \xrightarrow[2\text{ diff}]{f/g} \mathbb{R}: \quad \text{Tay 2-Pol } \begin{cases} \widetilde{f}\,(x) = -1 + 2\,(x-1) + 3(x-1)^2 & \text{um } x = 1 \\ \widetilde{g}\,(x) = 1 - x + 5x^2 & \text{um } x = 0 \end{cases} \text{ Tay 2-Pol } f\,(g\,(x)) \text{ um } x = 0$$

$$\mathbb{R} \xrightarrow[3\text{ diff}]{\text{ɿ}} \mathbb{R}: \quad \text{Tay 3-Pol } 1 + 2x - x^2 \text{ um } x = 1: \quad {}^1\text{ɿ} / {}^1\underline{\text{ɿ}} / {}^1\underline{\underline{\text{ɿ}}} / {}^1\text{ɿ}^{(3)}$$

$$\mathbb{R}_> \xrightarrow[\underset{\infty}{\text{diff}}]{\log} \mathbb{R}: \quad \bigwedge_n^{\mathbb{N}} {}^x_n\underline{\log}$$

$0 < x < 2$: TaySer um $x = 1$: $x > 0$: Umkehrregel

$$\begin{cases} e^{-1/x^2} & x \neq 0 \\ 0 & x = 0 \end{cases} \text{ stet/diff /}\infty\text{ diff/TaySer/analyt? : } \quad \begin{cases} e^{-1/x} & x \neq 0 \\ 0 & x = 0 \end{cases} \Longrightarrow \bigwedge_n^{\mathbb{N}} {}^0_{n\_}\text{ɿ}$$

$${}^x\text{ɿ} = e^{x^2}\,\text{diff}_\infty \Longrightarrow \text{ TaySer } {}^x_{k\_}\text{ɿ} \text{ um 0 on } \mathbb{R}: \quad {}^x_{k\_}\text{ɿ} = p_k\,(x)\,e^{x^2} \begin{cases} p_k \in \mathbb{R}[x] & \deg p_k \\ p_k \text{ even/odd} & k \text{ even/odd} \end{cases}$$

$$\mathbb{I} \xrightarrow[\infty\text{ diff}]{\text{ɿ}} \mathbb{R}: \quad \bigwedge_n^{\mathbb{N}} \bigwedge_x^{\mathbb{I}} \overline{{}^x_{n\_}\text{ɿ}} \leqslant M \Longrightarrow \text{ TayRei glm konv gegen ɿ}$$