$$\nabla[\boldsymbol{f}^{\mathbf{0}}]_n^{+} = \mathbf{1}_{\boldsymbol{n=0}}$$

$$[\boldsymbol{f}^{\mathbf{0}}]_n^{+} = \mathbf{1}_{\boldsymbol{n\geq 0}}$$

$$[\boldsymbol{f}]_n^{+} = \sum_{j=0}^{n} f(j)$$

$$[\boldsymbol{f}^{\mathbf{2}}]_n^{+} = \sum_{j=0}^{n} \sum_{k=0}^{n-j} f(j)\cdot f(k)$$

$$[\boldsymbol{f}^{\mathbf{3}}]_n^{+} = \sum_{j=0}^{n} \sum_{k=0}^{n-j} \sum_{l=0}^{n-j-k} f(j)\cdot f(k)\cdot f(l)$$

$$[\boldsymbol{f}^{\boldsymbol{k}}]_n^{+} = \sum_{j=0}^{n} f(j)\cdot[f^{k-1}]_{n-j}^{+}$$

$$[\boldsymbol{f}-1]_n^{+} = \sum_{j=1}^{n} f(j)$$

$$[(\boldsymbol{f}-1)^2]_n^{+} = \sum_{j=1}^{n} \sum_{k=1}^{n-j} f(j)\cdot f(k)$$

$$[(\boldsymbol{f}-1)^3]_n^{+} = \sum_{j=1}^{n} \sum_{k=1}^{n-j} \sum_{l=1}^{n-j-k} f(j)\cdot f(k)\cdot f(l)$$

$$[(\boldsymbol{f}-1)^k]_n^{+} = 0 \, if \, k > n$$

$$[(\boldsymbol{f}-1)^k]_n^{+} = \sum_{j=1}^{n} f(j)\cdot[(\boldsymbol{f}-1)^{k-1}]_{n-j}^{+}$$

$$[\boldsymbol{f}^z]_n^{+} = \sum_{k=0} \binom{z}{k} [(\boldsymbol{f}-1)^k]_n^{+}$$

$$[\log \boldsymbol{f}]_n^{+} = \sum_{k=1} \frac{(-1)^{k+1}}{k} [(\boldsymbol{f}-1)^k]_n^{+}$$

$$[\log \boldsymbol{f}]_n^{+} = \lim_{z\to 0} \frac{\partial}{\partial z} [\boldsymbol{f}^z]_n^{+}$$

$$[(\log \boldsymbol{f})^k]_n^{+} = \lim_{z\to 0} \frac{\partial^k}{\partial z^k} [\boldsymbol{f}^z]_n^{+}$$

$$[(\log \boldsymbol{f})^k]_n^{+} = \sum_{j=1}^{n} \nabla[\log \boldsymbol{f}]_j^{+}\cdot[(\log \boldsymbol{f})^{k-1}]_{n-j}^{+}$$

$$[\boldsymbol{f}^z]_n^{+} = \sum_{k=0} \frac{z^k}{k!} [(\log \boldsymbol{f})^k]_n^{+}$$

$$[\boldsymbol{f}(s,y)]_n^+ = \sum_{j=y}^{n} (-s) \cdot f(j)$$

$$[\boldsymbol{f}^2]_n^+ = \sum_{j=y}^{n-y} \sum_{k=y}^{n-j} f(j) \cdot f(k)$$

$$[\boldsymbol{f}(s,y)^3]_n^+ = \sum_{j=y}^{n-2y} \sum_{k=y}^{n-j-y} \sum_{l=y}^{n-j-k} f(j) \cdot f(k) \cdot f(l)$$

$$[\boldsymbol{f}(s,y)^k]_n^+ = \sum_{j=y}^{n} f(j) \cdot [\boldsymbol{f}(s,y)^{k-1}]_{n-j}^+$$

/// ??? VERIFY THIS

$$[\boldsymbol{f}(y)^k]_n^+ = \sum_{j=0}^{k} \binom{k}{j} f(y+1)^j [\boldsymbol{f}(y+1)^{k-j}]_{n-j \cdot (y+1)}^+$$

$$[\boldsymbol{f}(y+1)^k]_n^+ = \sum_{j=0}^{k} (-1)^j \binom{k}{j} f(y)^j \cdot [\boldsymbol{f}(y)^{k-j}]_{n-j(y+1)}^+$$

$$[\infty]_n^+ = \sum_{j=0}^{n} 1$$

$$[\infty^2]_n^+ = \sum_{j=0}^{n} \sum_{k=0}^{n-j} 1$$

$$[\infty^3]_n^+ = \sum_{j=0}^{n} \sum_{k=0}^{n-j} \sum_{l=0}^{n-j-k} 1$$

$$[\infty^k]_n^+ = \sum_{j=0}^{n} [\infty^{k-1}]_{n-j}^+$$

$$[\infty-1]_n^+ = \sum_{j=1}^{n} 1$$

$$[(\infty-1)^2]_n^+ = \sum_{j=1}^{n} \sum_{k=1}^{n-j} 1$$

$$[(\infty-1)^3]_n^+ = \sum_{j=1}^{n} \sum_{k=1}^{n-j} \sum_{l=1}^{n-j-k} 1$$

$$[(\infty-1)^k]_n^+ = 0 \; if \; k > n$$

$$[(\infty-1)^k]_n^+ = \sum_{j=1}^{n} [(\infty-1)^{k-1}]_{n-j}^+$$

$$[\infty^z]_n^+ = \sum_{k=0} \binom{z}{k} [(\infty-1)^k]_n^+$$

$$[\log\infty]_n^+ = \sum_{k=1} \frac{(-1)^{k+1}}{k} [(\infty-1)^k]_n^+$$

$$[\log\infty]_n^+ = \lim_{z\to 0} \frac{\partial}{\partial z} [\infty^z]_n^+$$

$$[(\log\infty)^k]_n^+ = \lim_{z\to 0} \frac{\partial^k}{\partial z^k} [\infty^z]_n^+$$

$$[(\log\infty)^k]_n^+ = \sum_{j=1}^{n} \frac{1}{j} \cdot [(\log\infty)^{k-1}]_{n-j}^+$$

$$[\infty^z]_n^+ = \sum_{k=0} \frac{z^k}{k!} [(\log\infty)^k]_n^+$$

$$\nabla[\infty-1]_n^+=1\ if\ n>0, 0\ otherwise$$

$$\nabla[\infty]_n^+=1\ if\ n\geq 0, 0\ otherwise$$

$$\nabla[\log\infty]_n^+=\frac{1}{n}\ if\ n>0, 0\ otherwise$$

$$\nabla[(\infty-1)^k]_n^+=\binom{n-1}{k-1}$$

$$\nabla[\infty^z]_n^+=\frac{z^{(n)}}{n!}$$

...

$$[(\infty-1)^k]_n^+=\binom{n}{k}$$

$$[\infty^z]_n^+=\frac{(z+1)^{(n)}}{n!}$$

$$[\log\infty]_n^+=H_n$$

…

$$\nabla[\infty(0,y)^k]_n^+=\frac{(n+1-k\cdot y)^{(k-1)}}{(k-1)!}$$

$$[\infty(0,y)^k]_n^+=\frac{(n+1-k\cdot y)^{(k)}}{k!}$$

$$[x\cdot(\infty-1)]_n^+ = x\cdot\sum_{j\cdot x\le n} 1$$

$$[(x(\infty-1))^2]_n^+ = x^2\cdot\sum_{j\cdot x+k\cdot x\le n} 1$$

$$[(x(\infty-1))^3]_n^+ = x^3\sum_{j\cdot x+k\cdot x+l\cdot x\le n} 1$$

with j,k,l >= 1

$$[(x(\infty-1))^k]_n^+ = \frac{x^k}{k!}\cdot\prod_{j=0}^{k-1}\left(\frac{n}{x}-j\right)$$

$$\lim_{x\to 1}[(x(\infty-1))^k]_n^+ = \binom{n}{k}$$

$$\lim_{x\to 0}[(x(\infty-1))^k]_n^+ = \frac{n^k}{k!}$$

$$[(1+(x(\infty-1)))^z]_n^+ = \sum_{k=0}\binom{z}{k}[(x(\infty-1))^k]_n^+$$

$$\lim_{x\to 1}[(1+(x(\infty-1)))^z]_n^+ = \frac{(z+1)^{(n)}}{n!}$$

$$\lim_{x\to 0}[(1+(x(\infty-1)))^z]_n^+ = {}_1F_1(-z,1,-n)$$

$$\lim_{x\to 1}[\log(1+(x(\infty-1)))]_n^+ = H_n$$

$$\lim_{x\to 0}[\log(1+(x(\infty-1)))]_n^+ = \Gamma(0,n)+\log n+\gamma$$

NOW! ALTERNATING SERIES TIME! WHAT HAPPENS WHEN THESE THINGS FOLD BACK ON THEMSELVES?