$$\Pi(n)=li(n)+\lim_{x\to 1+}\sum_{k=1}^{\lfloor\frac{\log\mu}{\log x}\rfloor}\frac{x^k}{k}+\sum_{k=1}^{\lfloor\frac{\log n}{\log x}\rfloor}\frac{(-1)^{k-1}}{k}E_{k,x}'(n)$$

$$\Pi(n)=li(n)+\lim_{x\to 1+}E_{\log,x}(n)+\sum_{k=1}^{\lfloor\frac{\log\mu}{\log x}\rfloor}\frac{x^k}{k}$$

...

$$\Pi(n)=li(n)-\sum_{\rho}li(n^{\rho})-\log 2+\int_n^{\infty}\frac{dt}{t(t^2-1)\log t}+\frac{\Lambda(n)}{2\log n}$$

Thus

$$-\sum_{\rho}li(n^{\rho})-\log 2+\int_n^{\infty}\frac{dt}{t(t^2-1)\log t}+\frac{\Lambda(n)}{2\log n}=\lim_{x\to 1+}E_{\log,x}(n)+\sum_{k=1}^{\lfloor\frac{\log\mu}{\log x}\rfloor}\frac{x^k}{k}$$

...

$$E_{k,x}(n)=\sum_{j=1}^{n}E_{k-1,x}(\frac{n}{j})-x\cdot E_{k,x}(\frac{n}{j\cdot x})$$

$$E_{k,x}'(n)=\sum_{j=2}^{n}E_{k-1,x}'(\frac{n}{j})-x\cdot\sum_{j=1}^{n}E_{k,x}'(\frac{n}{j\,x})$$

$$E_{z,x}(n)=\sum_{k=0}\binom{z}{k}E_{k,x}'(n)$$

$$E_{k,x}'(n)=\sum_{j=0}^{k}(-1)^{k-j}\binom{k}{j}E_{j,x}(n)$$

$$E_{k,z}'(n)=\frac{\sin(\pi z)}{\pi}\sum_{k=0}\frac{(-1)^k}{z-k}E_{k,x}'(n)$$

...

$$E_{\log,x}(n)=\sum_{k=1}\frac{(-1)^{k+1}}{k}\cdot E_{k,x}'(n)$$

$$E_{\log,x}(n)=\lim_{z\to 0}\frac{\partial}{\partial z}E_{z,x}(n)$$

$$E_{\log,x}(n)=\lim_{z\to 0}\frac{\partial}{\partial z}E_{z,x}'(n)$$

...

$$E_{z,x}(n)=\sum_{j=0}(-1)^j\binom{z}{j}x^jD_z(\frac{n}{x^j})$$

$$D_z(n)=\sum_{j=0}(-1)^j\binom{-z}{j}x^jE_{z,x}(\frac{n}{x^j})$$

$$D_z(n)=\sum_{j=0}\sum_{k=0}(-1)^j\binom{-z}{j}\binom{z}{k}x^j E_{k,x}\left(\frac{n}{x^j}\right)$$

...

$$E_{k,x}'(n)=\sum_{j=0}^{k}\sum_{m=0}^{j}(-1)^j\binom{k}{j}\binom{j}{m}x^j D_{k-m}'\left(\frac{n}{x^j}\right)$$

$$D_k'(n)=(-1)^k+\sum_{j=0}\sum_{m=0}^{k}\binom{k}{m}\binom{m+j-1}{k-1}x^j E_{m,x}'\left(\frac{n}{x^j}\right)$$

...

$$[(1+x^{1-s}\cdot\zeta(s,1+x^{-1}))^{z}]_{n}=f_{z}(n,1+\frac{1}{x})\text{ where}$$
$$f_{z}(n,j)=\begin{cases}\displaystyle\sum_{k=0}^{\lfloor\frac{\log n}{\log(x j)}\rfloor}\binom{z}{k}\cdot(x^{1-s}\cdot j^{-s})^{k}\cdot f_{z-k}(\frac{n}{(x\cdot j)^{k}},1+y) & \text{if } n\geq x\,j\\ 1 & \text{if } n<x\,j\end{cases}$$

$$[(1+x^{1-s}\cdot\zeta(s,1+x^{-1}))^{z}]_{n}=f_{z}(n,1+\frac{1}{x})\text{ where}$$
$$f_{z}(n,j)=\begin{cases}\displaystyle\sum_{k=0}^{\lfloor\frac{\log n}{\log(x j)}\rfloor}\binom{z}{k}\cdot x^{k}\cdot((x\cdot j)^{-s})^{k}\cdot f_{z-k}(\frac{n}{(x\cdot j)^{k}},1+j) & \text{if } n\geq x\,j\\ 1 & \text{if } n<x\,j\end{cases}$$

$$[((1-x^{1-s})\zeta(s))^{z}]_{n}=1+f_{1}(n,1+\frac{1}{x_{d}})\text{ where } f_{k}(n,j)=\begin{cases}t_{x}(j)\cdot\frac{1}{x_{d}}\cdot(\frac{j}{x_{d}})^{-s}\cdot(\frac{z+1}{k}-1)(1+f_{k+1}(\frac{n}{j},1+\frac{1}{x_{d}}))+f_{k}(n,j+\frac{1}{x_{d}}) & \text{if } n\geq j\\ 0 & \text{if } n<j\end{cases}$$

$$t_{x}(m)=x\cdot(\lfloor\frac{m}{x}\rfloor-\lfloor\frac{m-1}{x}\rfloor)-(x+1)\cdot(\lfloor\frac{m}{x+1}\rfloor-\lfloor\frac{m-1}{x+1}\rfloor)$$

$$[(1+x^{1-s}\cdot\zeta(s,1+\frac{1}{x}))^{z}]_{n}=1+f_1(n,1+\frac{1}{x}) \text{ where } f_k(n,j)=\begin{cases}\frac{1}{x}\cdot j^{-s}\cdot(\frac{z+1}{k}-1)(1+f_{k+1}(\frac{n}{j},1+\frac{1}{x}))+f_k(n,j+\frac{1}{x}) & \text{if } n\geq j\\ 0 & \text{if } n<j\end{cases}$$

$$[(1+x^{1-s}\cdot\zeta(s,1+\frac{1}{x}))^{z}]_{n}=f_z(n,1+\frac{1}{x}) \text{ where } f_z(n,j)=\begin{cases}\sum_{k=0}^{\lfloor\frac{\log n}{\log j}\rfloor}\binom{z}{k}\cdot x^{-k}\cdot j^{-sk}\cdot f_{z-k}(\frac{n}{j^k},j+\frac{1}{x}) & \text{if } n\geq j\\ 1 & \text{if } n<j\end{cases}$$

...

$$t_x(n)=(\lfloor n\rfloor-\lfloor n-\frac{1}{x}\rfloor)-(1+\frac{1}{x})\cdot(\lfloor\frac{nx}{x+1}\rfloor-\lfloor\frac{nx-1}{x+1}\rfloor)$$

$$[((1-(1+\frac{1}{x})^{1-s})\zeta(s))^{z}]_{n}=1+f_1(n,1+\frac{1}{x}) \text{ where } f_k(n,j)=\begin{cases}t_x(j)\cdot j^{-s}\cdot(\frac{z+1}{k}-1)(1+f_{k+1}(\frac{n}{j},1+\frac{1}{x}))+f_k(n,j+\frac{1}{x}) & \text{if } n\geq j\\ 0 & \text{if } n<j\end{cases}$$

$$[((1-(1+\frac{1}{x})^{1-s})\zeta(s))^{z}]_{n}=f_z(n,1+\frac{1}{x}) \text{ where } f_z(n,j)=\begin{cases}\sum_{k=0}^{\lfloor\frac{\log n}{\log j}\rfloor}\binom{z}{k}\cdot t_x(j)^k\cdot j^{-sk}\cdot f_{z-k}(\frac{n}{j^k},j+\frac{1}{x}) & \text{if } n\geq j\\ 1 & \text{if } n<j\end{cases}$$

$$[(1+x^{1-s}\cdot\zeta(s,1+x^{-s}))^z]_n=1+f_1(n,1+x) \text{ where } f_k(n,j)=\begin{cases} x\cdot j^{-s}\cdot(\frac{z+1}{k}-1)(1+f_{k+1}(\frac{n}{j},1+x))+f_k(n,j+x) & \text{if } n\ge j \\ 0 & \text{if } n<j \end{cases}$$

$$[(1+x^{1-s}\cdot\zeta(s,1+x^{-s}))^z]_n=f_z(n,1+x) \text{ where } f_z(n,j)=\begin{cases} \sum_{k=0}^{\lfloor\frac{\log n}{\log j}\rfloor}\binom{z}{k}\cdot x^k\cdot j^{-sk}\cdot f_{z-k}(\frac{n}{j^k},j+x) & \text{if } n\ge j \\ 1 & \text{if } n<j \end{cases}$$

...

maps

$$t_x(n)=(\lfloor n\rfloor-\lfloor n-x\rfloor)-(1+x)\cdot(\lfloor\frac{n}{1+x}\rfloor-\lfloor\frac{n-x}{1+x}\rfloor)$$

$$[((1-(1+x)^{1-s})\zeta(s))^z]_n=1+f_1(n,1+x) \text{ where } f_k(n,j)=\begin{cases} t_x(j)\cdot j^{-s}\cdot(\frac{z+1}{k}-1)(1+f_{k+1}(\frac{n}{j},1+x))+f_k(n,j+x) & \text{if } n\ge j \\ 0 & \text{if } n<j \end{cases}$$

$$[((1-(1+x)^{1-s})\zeta(s))^z]_n=f_z(n,1+x) \text{ where } f_z(n,j)=\begin{cases} \sum_{k=0}^{\lfloor\frac{\log n}{\log j}\rfloor}\binom{z}{k}\cdot t_x(j)^k\cdot j^{-sk}\cdot f_{z-k}(\frac{n}{j^k},j+x) & \text{if } n\ge j \\ 1 & \text{if } n<j \end{cases}$$

$$[((1-2^{1-s})\zeta(s))^z]_n = f_z(n,2) \text{ where } f_z(n,j) = \begin{cases} \sum_{k=0}^{\lfloor \frac{\log n}{\log j} \rfloor} \binom{z}{k} \cdot (-1)^{(j+1)k} \cdot j^{-sk} \cdot f_{z-k}\left(\frac{n}{j^k}, j+1\right) & \text{if } n \geq j \\ 1 & \text{if } n < j \end{cases}$$