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

$$\{x^z\} = \sum_{k=0}^{\infty} \binom{z}{k} \{(x-\mathbf{1})^k\}$$

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

$$\{(x-\mathbf{1})^k\} = \sum_{j=0}^{k} (-1)^{k-j} \binom{k}{j} \{x^j\}$$

$$x^z = \sum_{k=0}^{\infty} \frac{z^k}{k!} \log^k x$$

$$\{x^z\} = \sum_{k=0}^{\infty} \frac{z^k}{k!} \{\log^k x\}$$

...

$$(x-1)^k = \sum_{j=0}^{\infty} (\lim_{t \to 0} \frac{\partial^j}{\partial t^j} (e^t - 1)^k) \log^j x$$

$$\{(x-\mathbf{1})^k\} = \sum_{j=0}^{\infty} (\lim_{t \to 0} \frac{\partial^j}{\partial t^j} (e^t - 1)^k) \{\log^j x\}$$

$$(x-1)^k = \sum_{j=0} \frac{1}{j!} (\lim_{t \to 0} \frac{\partial^j}{\partial t^j} \frac{t}{\log(1+t)}) \cdot (x-1)^{k-1+j} \cdot \log x$$

$$\{(x-\mathbf{1})^k\} = \sum_{j=0} \frac{1}{j!} (\lim_{t \to 0} \frac{\partial^j}{\partial t^j} \frac{t}{\log(1+t)}) \cdot \{(x-\mathbf{1})^{k-1+j} \cdot \log x\}$$

$$\log^k x = \sum_{j=1} \frac{(-1)^{j+1}}{j} (x-1)^j \cdot \log^{k-1} x$$

$$\{\log^k x\} = \sum_{j=1} \frac{(-1)^{j+1}}{j} \{(x-\mathbf{1})^j \cdot \log^{k-1} x\}$$

$$\log x = \sum_{k=0} \frac{B_k}{k!} (x-1) \cdot \log^k x$$

$$\{\log x\} = \sum_{k=0} \frac{B_k}{k!} \{(x-\mathbf{1}) \cdot \log^k x\}$$

$$\log^a x = \sum_{k=0} \frac{B_k}{k!}(x-1) \cdot \log^{k+a} x$$

$$\{\log^a x\} = \sum_{k=0} \frac{B_k}{k!} \{(x-\mathbf{1}) \cdot \log^{k+a} x\}$$

which is

$$\log x = \sum_{k=0} \frac{1}{k!} \cdot (\lim_{t \to 0} \frac{\partial^k}{\partial t^k} \frac{t}{e^t - 1}) \cdot (x-1) \cdot \log^k x$$

...

$$(x-1)^{a+b} = (x-1)^a \cdot (x-1)^b$$

$$\{(x-1)^{a+b}\} = \{(x-1)^a \cdot (x-1)^b\}$$

$$x^{y+z} = x^y \cdot x^z$$

$$\{x^{y+z}\} = \{x^y \cdot x^z\}$$

$$\log^{a+b} x = \log^a x \cdot \log^b x$$

$$\{\log^{a+b} x\} = \{\log^a x \cdot \log^b x\}$$

...

$$\log x = \lim_{z \to 0} \frac{\partial}{\partial z} x^z$$

$$\{\log x\} = \lim_{z \to 0} \frac{\partial}{\partial z} \{x^z\}$$

$$\log x = \lim_{z \to 0} \frac{x^z - 1}{z}$$

$$\{\log x\} = \lim_{z \to 0} \frac{\{x^z\} - 1}{z}$$

$$\log^k x = \lim_{z \to 0} \frac{\partial^k}{\partial z^k} x^z$$

$$\{\log^k x\} = \lim_{z \to 0} \frac{\partial^k}{\partial z^k} \{x^z\}$$

...

$$\log x^z = z \log x$$

$$\{\log x^z\} = z\,\{\log x\}$$

$$\log a \cdot b = \log a + \log b$$

$$\{\log a \cdot b\} = \{\log a\} + \{\log b\}$$

$$\log \frac{a}{b} = \log a - \log b$$

$$\{\log \frac{a}{b}\} = \{\log a\} - \{\log b\}$$

$$\ldots$$

$$t \cdot \log x = \lim_{z \to 0} \frac{\partial}{\partial z} (x^z)^t$$

$$t \cdot \{\log x\} = \lim_{z \to 0} \frac{\partial}{\partial z} \{x^z\}^t$$

$$\log n + \log m = \lim_{z \to 0} \frac{\partial}{\partial z} (n^z \cdot m^z)$$

$$\{\log n\} + \{\log m\} = \lim_{z \to 0} \frac{\partial}{\partial z} (\{n^z\} \cdot \{m^z\})$$

$$\log n - \log m = \lim_{z \to 0} \frac{\partial}{\partial z} (\frac{n^z}{m^z})$$

$$\{\log n\} - \{\log m\} = \lim_{z \to 0} \frac{\partial}{\partial z} (\frac{\{n^z\}}{\{m^z\}})$$

$$\ldots$$

$$\{(n \cdot m)^z\} = \sum_{\frac{\log j}{\log n} + \frac{\log k}{\log m} \le 1} \nabla \{j^z\} \cdot \nabla \{k^z\}$$

$$\{(\frac{n}{m})^z\} = \sum_{\frac{\log j}{\log n} + \frac{\log k}{\log m} \le 1} \nabla \{j^z\} \cdot \nabla \{k^{-z}\}$$

$$\ldots$$

$$\log (n \cdot m) = \log n + \log m$$

$$\{\log(n \cdot m)\} = \{\log n\} + \{\log m\}$$

$$\log \frac{n}{m} = \log n - \log m$$

$$\{\log \frac{n}{m}\} = \{\log n\} - \{\log m\}$$

$$\{(x-\mathbf{1})^k\} =$$

	$\int$	$\sum$
+	$\frac{(x-1)^k}{k!}$	$\binom{x-1}{k}$
*	$(-1)^k \cdot \frac{\gamma(k, -\log x)}{\Gamma(k)}$	$D_k'(x)$

$$\frac{\partial}{\partial x}\{(x-\mathbf{1})^k\} =$$

OR

$$\nabla_x\{(x-\mathbf{1})^k\} =$$

	$\int$	$\sum$
+	$\frac{(x-1)^{k-1}}{(k-1)!}$	$\binom{x-2}{k-1}$
*	$\frac{\log^{k-1} x}{(k-1)!}$	$d_k'(x)$

$$\{x^z\} =$$

	$\int$	$\sum$
+	$L_z(1-x)$	$\frac{x^{(z)}}{z!}$
*	$L_{-z}(\log x)$	$D_z(x)$

$$\frac{\partial}{\partial x} x^z = z \cdot x^{z-1}$$

$$\frac{\partial}{\partial x}\{x^z\} =$$

OR

$$\nabla_x\{x^z\} =$$

	$\int$	$\sum$
+	$L_{z-1}^{(1)}(1-x)$	$\frac{x^{(z-1)}}{(z-1)!}$
*	$\frac{-1}{x} \cdot L_{-z-1}^{(1)}(\log x)$	$d_z(x)$

$$\log x = \log x$$

$$\{\log x\} =$$

	$\int$	$\sum$
+	$\Gamma(0, x-1) + \log(x-1) + \gamma$	H_{x-1}
*	$li(x) - \log\log x - \gamma$	$\Pi(x)$

$$\frac{\partial}{\partial x}\log x = \frac{1}{x}$$

wer

$$\frac{\partial}{\partial x}\{\log x\} =$$

OR

$$\nabla_x \{\log x\} =$$

	$\int$	$\sum$
+	$\frac{1}{x-1} - \frac{e^{1-x}}{x-1}$	$\frac{1}{x-1}$
*	$\frac{1}{\log x} - \frac{1}{x \log x}$	$\kappa(x)$