PoCS 2013-09-23

$$\frac{n_k}{n_{k-1}} = \frac{(k-1)(1-\rho)}{1+(1-\rho)k}$$

$$\Gamma(k) = (k-1)!$$

$$n_k = \left[\frac{(k-1)(1-\rho)}{1+(1-\rho)k}\right] \underbrace{\left[\frac{(k-2)(1-\rho)}{1+(1-\rho)(k-1)}\right] n_{k-2}}_{n_{k-1}}$$

$$\left[\frac{(k-3)(1-\rho)}{1+(1-\rho)(k-2)}\right] n_{k-3}$$

$$\cdots\cdots \left[\frac{☆ \times (1-\rho)}{1+(1-\rho)☺}\right] n_1$$

$$\Gamma(x+1) = x\,\Gamma(x)$$

$$\Gamma(1) = 1$$

$x = n+1$ $\quad \Gamma(n+1) = n\,\Gamma(n) = \cdots = n!$

example $\quad 0 < z < 1$

$$(1+zk)(1+z(k-1)) \cdots\cdots (1+z1)$$

$$= z^k\left(\frac{1}{z}+k\right)\left(\frac{1}{z}+k-1\right)\cdots\cdots\left(\frac{1}{z}+1\right) = z^k \frac{\left(\frac{1}{z}+k\right)\left(\frac{1}{z}+k-1\right)\cdots}{\frac{1}{z}\cdot\left(\frac{1}{z}-1\right)\left(\frac{1}{z}-2\right)\cdots}$$

differ by 1

$$= z^k \frac{\Gamma\left(\frac{1}{z}+k+1\right)}{\Gamma\left(\frac{1}{z}+1\right)}.$$