0.1 Computaton of μ_t

$$\begin{aligned}
\mu_{t+1}(L_l, d, \mu_t) &= \underset{Z\sim\mathbf{N(0,1)}}{\mathbf{E}}\left[p(\hat{\mu}_t + Z, t)\right] \\
&= \underset{Z\sim\mathbf{N(0,1)}}{\mathbf{E}}\left[\frac{1}{\hat{L}_l}\sum_{k=0}^{d}\frac{\hat{\mu}_t^k(\hat{\mu}_t + Z)^k}{k!}\right] \\
&= \frac{1}{\hat{L}_l}\sum_{k=0}^{d}\frac{\hat{\mu}_t^k}{k!}\underset{Z\sim\mathbf{N(0,1)}}{\mathbf{E}}\left[(\hat{\mu}_t + Z)^k\right]
\end{aligned}$$

0.2 Computation of $\underset{Z\sim\mathbf{N(0,1)}}{\mathbf{E}}\left[(\hat{\mu}_t + Z)^k\right]$

$$\begin{aligned}
\underset{Z\sim\mathbf{N(0,1)}}{\mathbf{E}}\left[(\hat{\mu}_t + Z)^k\right] &= \underset{Z\sim\mathbf{N(0,1)}}{\mathbf{E}}\left[\sum_{i=0}^{k}\binom{k}{i}\hat{\mu}_t^{k-1}Z^i\right] \\
&= \sum_{i=0}^{k}\binom{k}{i}\hat{\mu}_t^{k-1}\underset{Z\sim\mathbf{N(0,1)}}{\mathbf{E}}\left[Z^i\right] \\
&= \sum_{i=0}^{k}\binom{k}{i}\hat{\mu}_t^{k-1}(i \mod 2) * (i-1)!!
\end{aligned}$$