Quzi2

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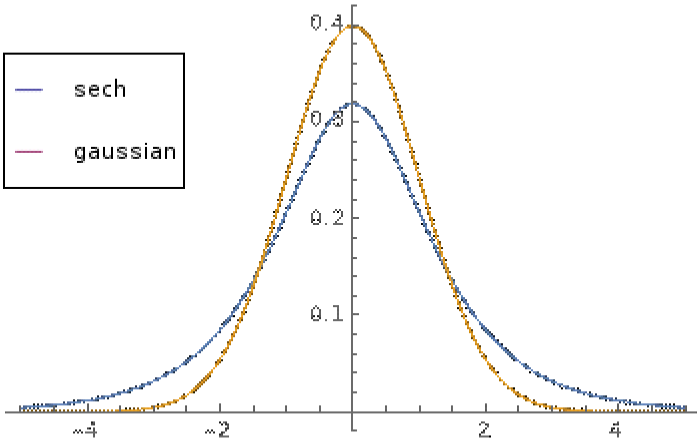

1. μ=0 , σ = 1

from <https://sandbox.open.wolframcloud.com/app/objects/aca53cbb-7588-4f95-9bae-1e147c2d44f1>

2. Yes, it is a super Gaussian distribution
3.

$$③\quad L \overset{\text{def}}{=} \log P(D|V) \qquad P(D|V) = \prod_{n=1}^{N} \prod_{K=1}^{K} P_K(V_K^T x^{(n)})\,|\det(V)|$$

$$\Rightarrow L = N \log|\det(V)| + \sum_{K=1}^{K} \sum_{n=1}^{N} \log[P_K(V_K^T X^{(n)})]$$

$$④\quad \frac{\partial L}{\partial V_{ij}} = N \frac{V_{ij}}{|\det(V)|} + \frac{\partial\left(\sum_{n=1}^{n}\sum_{K=1}^{K} \log \frac{\operatorname{sech}(V_i^T X^n)}{\pi}\right)}{\partial V_{ij}}$$

$$= N V_{ij} + \sum_{n=1}^{n} \frac{1}{\operatorname{sech}(V_i^T X^{(n)})} \cdot \tanh(V_i^T X^{(n)})(-\operatorname{sech}(V_i^T X^{(n)})) X_j^{(n)}$$

$$= N \cdot V_{ij} - \sum_{n=1}^{n} \tanh(V_i^T X^{(n)}) \cdot X_j^{(n)}$$