











$$1 = e^{-\frac{\pi^2}{2\sqrt{P}}}$$





$$] = 1 - \left(1 - e^{-\frac{\pi^2}{2\sqrt{P/N}}} \right)^N,$$



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$$2 \sqrt{r_1 r_2} \frac{1}{\sqrt{2\pi}} e^{-y^2/2} dy.$$



$$= \mathbb{E} \exp \left[- \sum_i f(|Y_i|) \right] = \mathbb{E} \prod_i \exp \left[- f(|Y_i|) \right]$$

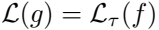
$$= \mathbb{E}_n \left[(2\pi)^{-n/2} \int_0^\infty \cdots \int_0^\infty \prod_{i=0}^n \exp[-f(y_i)] \frac{2}{\sqrt{2\pi}} e^{-y_i^2} dy_1 \cdots dy_n \right]$$

$$= \mathbb{E}_n \left[(2\pi)^{-n/2} \left(\int_0^\infty 2 \exp[-f(y) - y^2] dy \right)^n \right]$$

$$= \mathbb{E}_n \exp \left[\sum_{i=0}^n \log \left(\int_0^\infty \exp[-f(y)] \frac{2e^{-y^2}}{\sqrt{2\pi}} dy \right) \right]$$



$$g = -\log\left(\int_0^{\infty} \exp[-f(v)] \frac{e^{-v^2}}{\sqrt{2\pi}} dv\right)$$



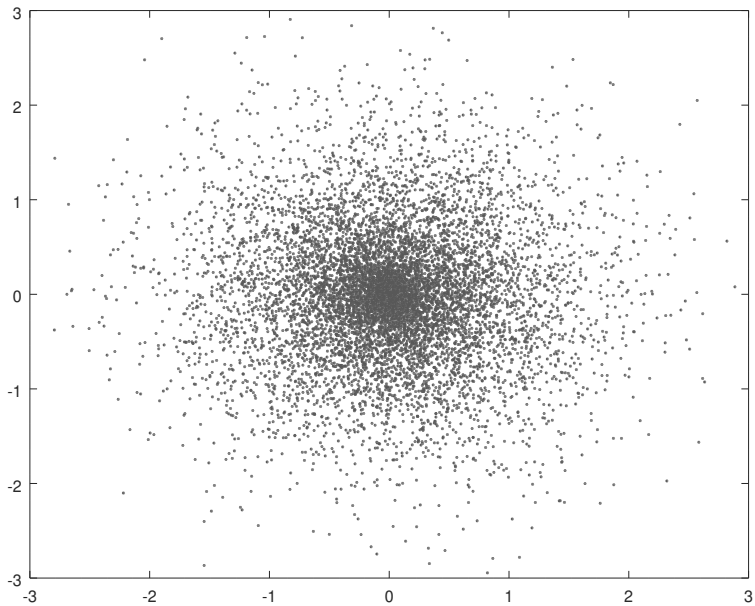
$$= \exp \left[- \int_{\mathbb{R}^2} 1 - e^{\log \left(\int_0^\infty \exp[-f(y)] \frac{2e^{-y^2}}{\sqrt{2\pi}} dy \right)} \Lambda(dx) \right]$$

$$= \exp \left[- \int_{\mathbb{R}^2} \left(1 - \int_0^\infty \exp[-f(y)] \frac{2e^{-y^2}}{\sqrt{2\pi}} dy \right) \Lambda(dx) \right]$$

$$= \exp \left[- \int_{\mathbb{R}^2} \int_0^\infty (1 - \exp[-f(y)]) \frac{2e^{-y^2}}{\sqrt{2\pi}} dy \Lambda(dx) \right]$$

$$= \exp \left[- \int_0^{\infty} (1 - \exp[-f(y)]) \sqrt{\frac{2}{\pi}} e^{-y^2} N dy \right], \quad (1)$$

$$\sqrt{\frac{2}{\pi}} e^{-x^2} \mathcal{N}.$$





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