

For readability let's define  $f(\cdot) := \log(p_{\hat{\theta}}(\mathbf{x}|\cdot))$ . Then for some  $x^l \in \mathbb{R}^n$  the following holds true:

$$\mathbb{E}_{q_{\psi}(\mathbf{z}|x^l)}[f(\mathbf{z})] = \mathbb{E}_{p(\epsilon)}[f(g(\epsilon, x^l; \psi))]$$