Principal Component Analysis

M-step

$$\max_{\theta} \mathbb{E}_{q(T)} \sum_i \log p(x_i \mid t_i, \theta) p(t_i)$$

$$= \sum_i \log \frac{1}{Z}$$

$$+ \sum_i \mathbb{E}_{q(t_i)} \underbrace{\log \left(\exp\left(-\frac{(x - W t_i - b)^2}{2\sigma^2} \right) \exp\left(-\frac{t_i^2}{2} \right) \right)}_{a t_i^2 + c t_i + d}$$