



$$A: \frac{d\ell}{d\mu_B} = \left( -\frac{2}{m} \sum (x_i - \hat{\mu}_B) \right) \left( \frac{d\ell}{d\sigma_B^2} \right) + \left( \sum \frac{-1}{\sqrt{\sigma_B^2 + \epsilon}} \cdot \frac{d\ell}{d\hat{x}_i} \right)$$

$$B: \frac{d\mu_B}{d x_i} = \frac{1}{m}$$

$$C: \frac{d\ell}{d x_i} = \frac{1}{m} \frac{d\ell}{d\mu_B} + \frac{2}{m} (x_i - \hat{\mu}_B) \frac{d\ell}{d\sigma_B^2} + \frac{1}{\sqrt{\sigma_B^2 + \epsilon}} \frac{d\ell}{d\hat{x}_i}$$