

$$\frac{\partial^2 F}{\partial A \partial B} = \frac{1}{N} \sum_{n=1}^N -y_n z_n \frac{\partial \theta(H)}{\partial H} \frac{\partial H}{\partial B} = \frac{1}{N} \sum_{n=1}^N -y_n z_n \theta(H) (1 - \theta(H)) (-y_n) = \frac{1}{N} \sum_{n=1}^N z_n p_n (1 - p_n)$$