$$\frac{\partial \mathcal{L}(w, w_0, \xi, \lambda, \mu)}{\partial w} = 0 \quad \Rightarrow \quad w = \sum_{i=1}^{N} \lambda_i y_i x_i \tag{1}$$

$$\frac{\partial \mathcal{L}(w, w_0, \xi, \lambda, \mu)}{\partial w_0} = 0 \quad \Rightarrow \quad \sum_{i=1}^{N} \lambda_i y_i = 0 \tag{2}$$

$$\frac{\partial \mathcal{L}(w, w_0, \xi, \lambda, \mu)}{\partial \xi_i} = 0 \quad \Rightarrow \quad C - \mu_i - \lambda_i = 0 \tag{3}$$

Putting (**??**), (**??**) and (**??**) into $\mathcal{L}(w, w_0, \xi, \lambda, \mu)$, we have

$$\mathcal{L}(\lambda, \xi) = \frac{1}{2}\|w\|^2 + C\sum_{i=1}^{N} \xi_i - \sum_{i=1}^{N} \mu_i \xi_i - \sum_{i=1}^{N} \lambda_i (y_i(w^T x_i + w_0) - 1 + \xi_i) \tag{4}$$

$$= \frac{1}{2}\sum_{i=1}^{N}\sum_{j=1}^{N} \lambda_i \lambda_j y_i y_j x_i^T x_j + C\sum_{i=1}^{N} \xi_i - \sum_{i=1}^{N} \mu_i \xi_i - \sum_{i=1}^{N} \lambda_i y_i w^T x_i - \sum_{i=1}^{N} \lambda_i y_i w_0 + \sum_{i=1}^{N} \lambda_i - \sum_{i=1}^{N} \lambda_i \xi_i \tag{5}$$

$$= \frac{1}{2}\sum_{i=1}^{N}\sum_{j=1}^{N} \lambda_i \lambda_j y_i y_j x_i^T x_j + C\sum_{i=1}^{N} \xi_i - \sum_{i=1}^{N} \mu_i \xi_i - \sum_{i=1}^{N}\sum_{j=1}^{N} \lambda_i \lambda_j y_i y_j x_i^T x_j - \sum_{i=1}^{N} \lambda_i y_i w_0 + \sum_{i=1}^{N} \lambda_i - \sum_{i=1}^{N} (\tag{6}$$

$$= \sum_{i=1}^{N} \lambda_i - \frac{1}{2}\sum_{i=1}^{N}\sum_{j=1}^{N} \lambda_i \lambda_j y_i y_j x_i^T x_j. \tag{7}$$