$$\frac{\partial}{\partial \alpha_i} \Rightarrow 0$$

$$\left(w^T x_i + b\right) y_i - 1 = 0$$

$$w^T x_i + b = y_i$$

$$b = y_i - w^T x_i$$

$$\frac{W^T W}{2}$$

$$-\frac{\sum_{i,j} \alpha_i \alpha_j y_i y_j x_i x_j}{2} + \sum_i \alpha_i$$

$$-\left[\sum_i \alpha_i W^T x_i y_i + \sum_i \alpha_i b y_i + \sum \alpha_i\right]$$

$$\sum_i b \alpha_i y_i$$

$$b\left[\sum_i \alpha_i y_i\right] = 0$$