$$\text{Cost}(w,b) = -\sum y_i \log(S(wx_i+b)) - \sum(1-y_i)\log(1-S(wx_i+b))$$

$$\frac{\partial}{\partial b}\text{Cost}(w,b) = -\sum y_i(1-S(wx_i+b)) + \sum(1-y_i)S(wx_i+b)$$

$$\frac{\partial}{\partial w}\text{Cost}(w,b) = -\sum y_i(1-S(wx_i+b))x_i + \sum(1-y_i)S(wx_i+b)x_i$$