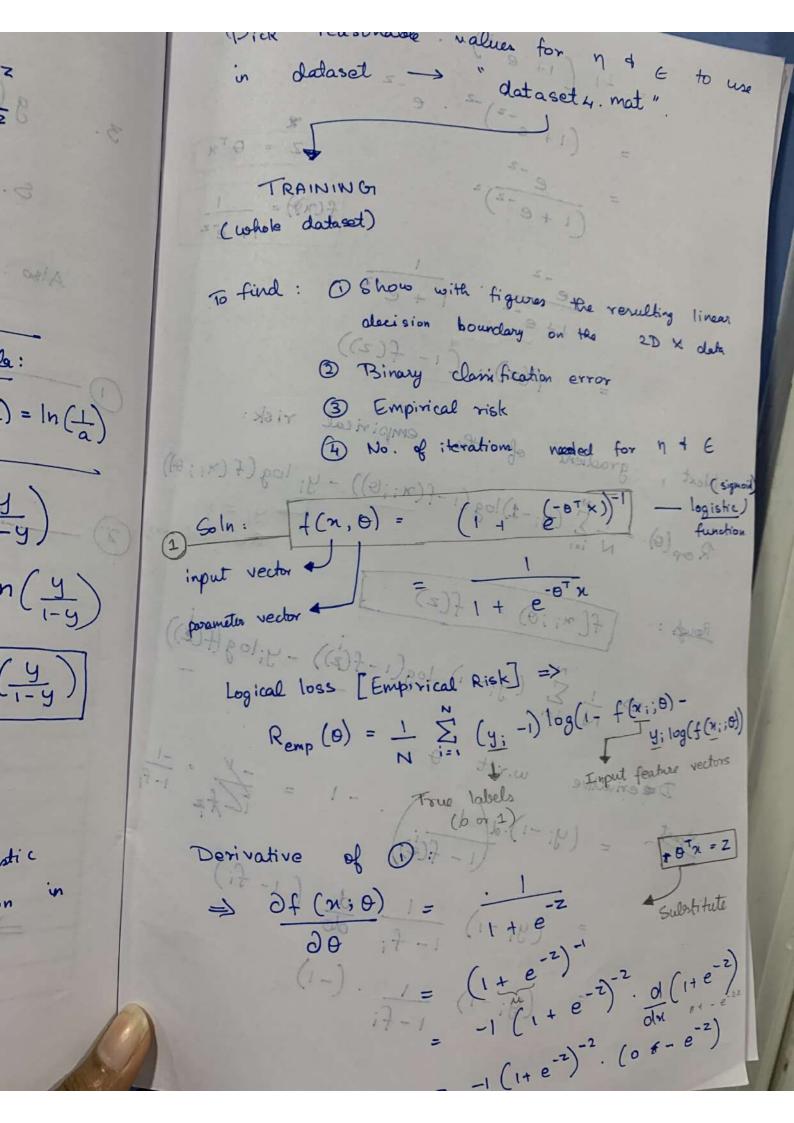


(2) Inverse of
$$g(z)$$
 is given by

$$g'(y) = \ln \left(\frac{y}{1-y}\right)$$

$$g(z) = \frac{1}{1+e^{-z}} = \frac{1}{1+e^{-z}}$$

$$y' = \frac{1}{1+e^{-z}} = \frac{1}{1+e^$$



$$\begin{aligned} & = \frac{-1}{(1+e^{-z})^{-2}} \cdot e^{-z} \\ & = \frac{e^{-z}}{(1+e^{-z})^{-2}} \cdot e^{-z} \\ & = \frac{e^{-z}}{(1+e^{-z})^{-2}}$$

= - (y (log (f(x; 0)) + (1-y) log (1-f(x, 0))) Substitute $f(x;0) = \frac{1}{2}(0^{T}x)$: f_{Z} = - (y log fz) + (1-y) log (1-fz) Gradied o(z) is $\frac{d}{dz} \sigma(z) = \sigma z \left(1 - \sigma(z) \right)$ = f(x; 0) (1- f(x; 0))x Now computing together. $\frac{\partial l(0)}{\partial 0} = -\left(\frac{y}{f(n;0)} \frac{\partial f(n;0)}{\partial 0} - \frac{1-y}{1-f(n;0)} \frac{\partial f(n;0)}{\partial 0}\right)$ = - (y (1-f(x;0))x - (1-y)f(x;0)x) $\frac{\partial \mathcal{Q}(0)}{\partial \theta} = f((x; \theta) - y) x$.. gradient of logistic loss function w.r.t d Remp(0) = 1 \(\sum_{i=1}^{N} \left(\gamma_i \cdot \text{0} \right) - y_i \right) \gamma_i \)