a) 
$$L_{\beta}(\chi, y) = \prod_{i=1}^{n} L_{\beta}(\chi_{i}, y_{i}) \left( \frac{\partial \chi_{i}}{\partial \chi_{i}} \right)$$

$$= \prod_{i=1}^{n} \left( \frac{1}{1 + \exp(-\pi_i \tau_{\beta})} \right)^{y_i} \left( \frac{\exp(-\pi_i \tau_{\beta})}{1 + \exp(-\pi_i \tau_{\beta})} \right)^{1-y_i^2} - 0$$

es. (1) the review breaks out.

Henry with the mercenses with the mark horgen

c) Given the property 
$$f(u) = \frac{1}{1 + enp(-u)}$$
 bring strictly increasing, lets take a look at the first part of eq.  $\mathbb{D}$ 

When the doita is linearly seperable, xiB will be positive for all training points with Yi=1. So this part can always be made larger by increasing B (by multiples) - (deduced from that The second term in O, is  $\left(\frac{\exp(-x_{i}\tau_{\beta})}{1+\exp(-x_{i}\tau_{\beta})}\right)^{1-y_{i}}$ which is equal to 1-B(u). Since the data is lineaely syperable, NIB 20 for all training items with  $y_i = 6$ , on increasing multiples of  $\beta$ , 1-f(u) will get larger. This part also increases with B. Hence, when data is linearly separable, the Maximum Likelihood can be made larger by increasing B multiples. Enjoyed found (17 - (11) franch of the country of morecoing, us take a cook at the first parch O go fo ATIK = JV when the deler is liverely expended, eight well int positive for net maining points with your for the case stury be made danger by in a fill by martiples) - (didition by filling in.

musement aprile is continued increasing