Q 1.1

Now, for LOOCV we can say that the loss would be, without the i^{th} training example using the maximum margin linear separator is

$$\text{LOOCV error} = \frac{1}{n} \sum_{i=1}^{n} \text{Loss}(y_i, f(x_i; \theta^{-i}; \theta_0^{-i}))$$

Here, we want to generalize how well the classifier would perform on a training example given, it was not present in the training set.

So, to find the ~~the~~ error of a maximum margin linear classifier, we can say that the points or values that lie outside or on the other side of margin would be classified correctly regardless of whether it is a part of the training set or not. But this not the case for SV. The SVs, are the key to define the margin and if removed can lead to mis-classification of result. Hence the LOOCV error would be

- $\text{LOOCV error} \leq \frac{\text{No. of SV}}{\text{total points}}$

$$\Rightarrow \boxed{\text{LOOCV error} \leq \frac{m}{n}}$$