Let Y be a n-dimensional linear subspace of a larger linear space X, and let $f \in X$.

1. What is the difference between a minimum and an infimum over a set?
2. How do you define $\text{dist}(f, Y)$?
3. How do you understand this definition

$$\sup_{\substack{f \in X \\ \|f\|=1}} \text{dist}(f, Y)$$