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1 Problem 1

1. The probability that all of the M dimensions of $x - y$ are between $-\epsilon$ and ϵ is
2. The probability of $\max_m |x_m - y_m| \leq \epsilon$ is at most p
3. If x is any point in χ , and y is a point in χ drawn randomly from a uniform distribution on χ , then the probability that $\|x - y\| \leq \epsilon$ is also at most p
4. Lowerbound on number N of points needed to guarantee
5. We can conclude that the effectiveness of the hierarchical agglomerative clustering algorithm in high dimensional spaces

2 Problem 2

1. Given a prior
2. MAP can be considered "more Bayesian" than ML because
3. One advantage the MAP method enjoys over the ML method
4. The Beta distribution is the conjugate prior of the Bernoulli
5. Under the ML approach

3 Problem 3

1. The K -means clustering objective is to minimize the sum of squared distances between prototype and data.
2. PCA relates to K -means

4 Problem 4