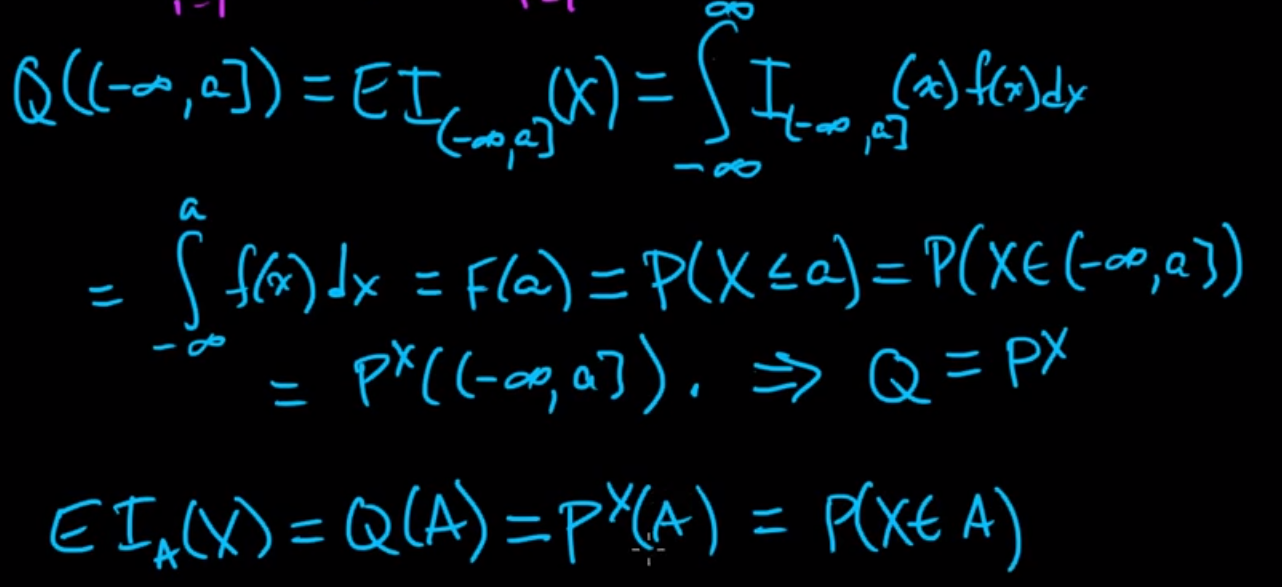
4a, b, c. Refer Notes

http://www.cs.cmu.edu/~10701/slides/10-701\_Fall\_2017\_Recitation\_2.pdf

5.

a. <https://www.youtube.com/watch?v=PiXu8_4X5dE>



b. https://www.youtube.com/watch?v=tFF2HXHNwcY

c.

the size grows exponentially with the dimension d.

2^784(number of bins^ dimensions)

<https://www.easycalculation.com/power-of-numbers.php>

d.

number of training points/region=k

e.

<https://people.eecs.berkeley.edu/~jfc/cs174/lecs/lec5/lec5.pdf>

<http://pages.cs.wisc.edu/~shuchi/courses/787-F09/scribe-notes/lec7.pdf>

6.a

Merge these 2 links below

<https://beginningwithml.wordpress.com/2018/09/18/7-gaussian-discriminant-analysis/>

<https://towardsdatascience.com/gaussian-discriminant-analysis-an-example-of-generative-learning-algorithms-2e336ba7aa5c>

Additional Ref <https://funglee.github.io/ml/slides/Lecture5-NaiveBayes-Notes.pdf>

6. b.

Note that the two Gaussians have contours that are the same shape and orientation, since they share a covariance matrix Σ, but they have different means µ0 and µ1.

<https://svivek.com/teaching/lectures/slides/naive-bayes/naive-bayes-linear.pdf>

\textit{Based on question a and we substitute,}

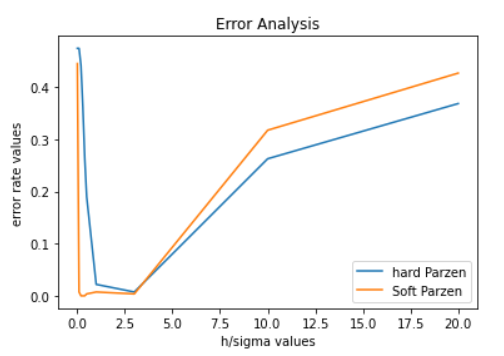
\[\theta\_1+\theta\_2+..+\theta\_N=1\]

\[(\frac{M\_1}{\mu\_N},\frac{M\_2}{\mu\_N}......\frac{M\_N}{\mu\_N})\*\theta\_N=1\]

\textit{We want $\theta\_N$}

\[\theta\_N=\frac{\mu\_N}{\sum\_{j=1}^{N}M\_j}\]

Q5. Give a detailed explanation on the below graph



Q7.

O(n)

<https://sebastianraschka.com/pdf/lecture-notes/stat479fs18/02_knn_notes.pdf>

https://towardsdatascience.com/k-nearest-neighbors-computational-complexity-502d2c440d5



This is prohibitively expensive for large number of samples But we need large number of samples for kNN to work well!

Soft🡪(n log n)