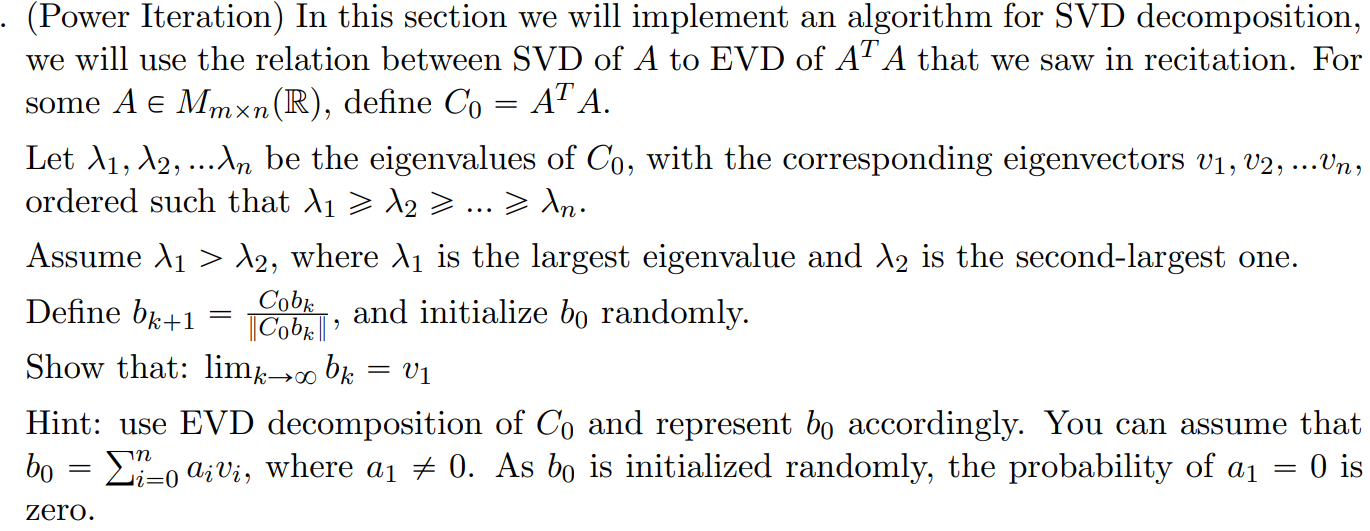
**67577 Intro to Machine Learning Guy Lutsker 207029448**



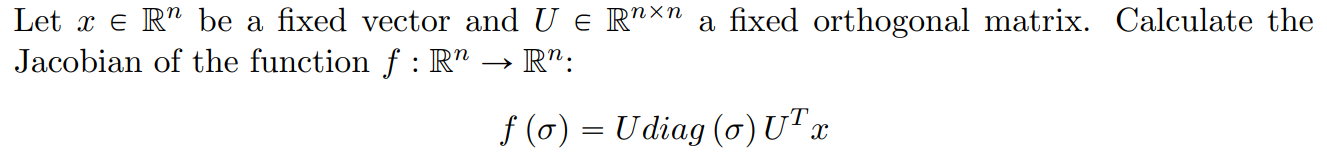


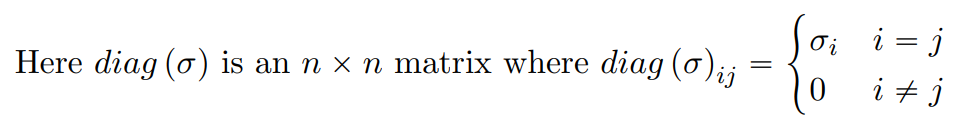




1. 

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1. 

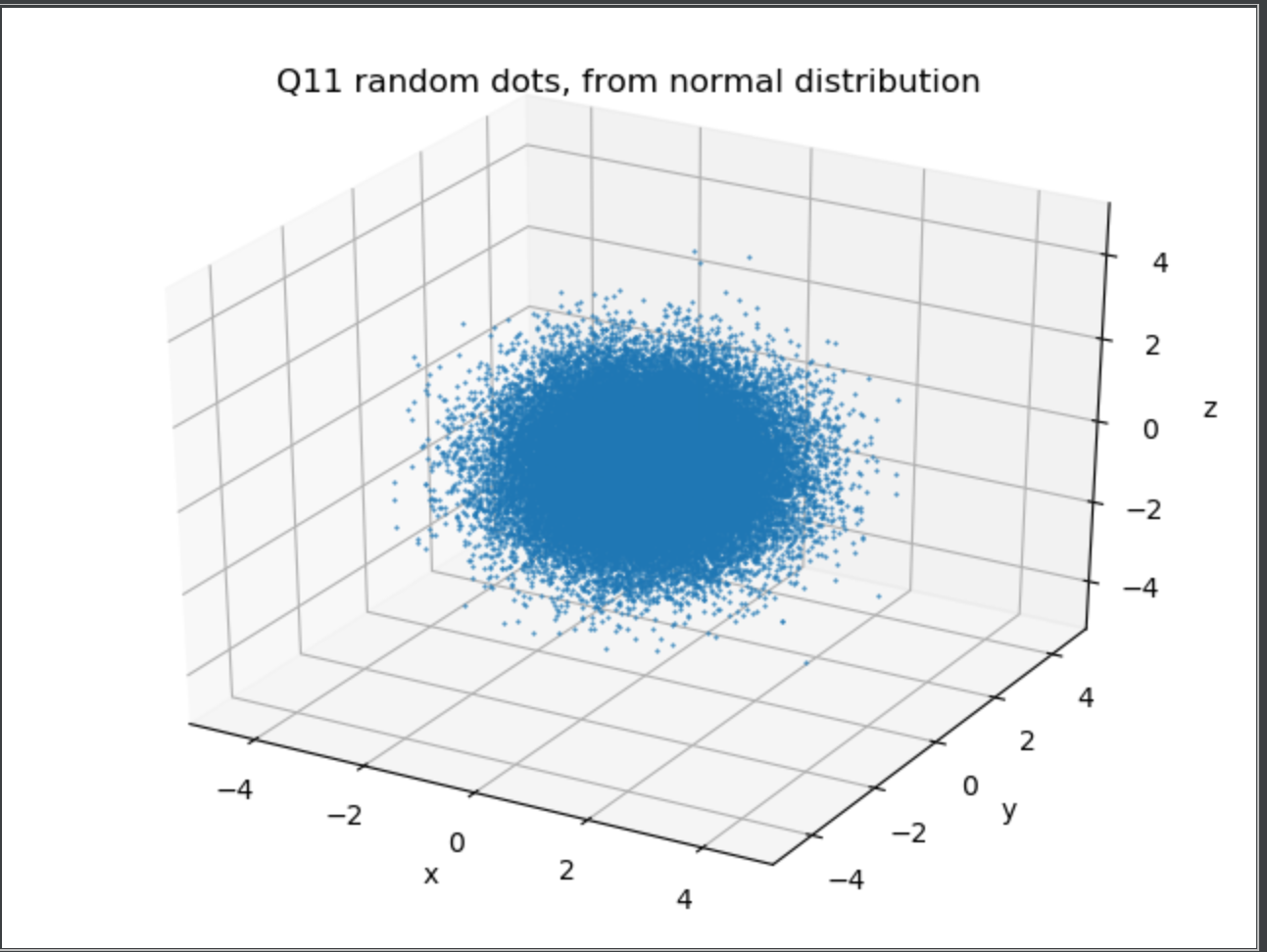








Plot:

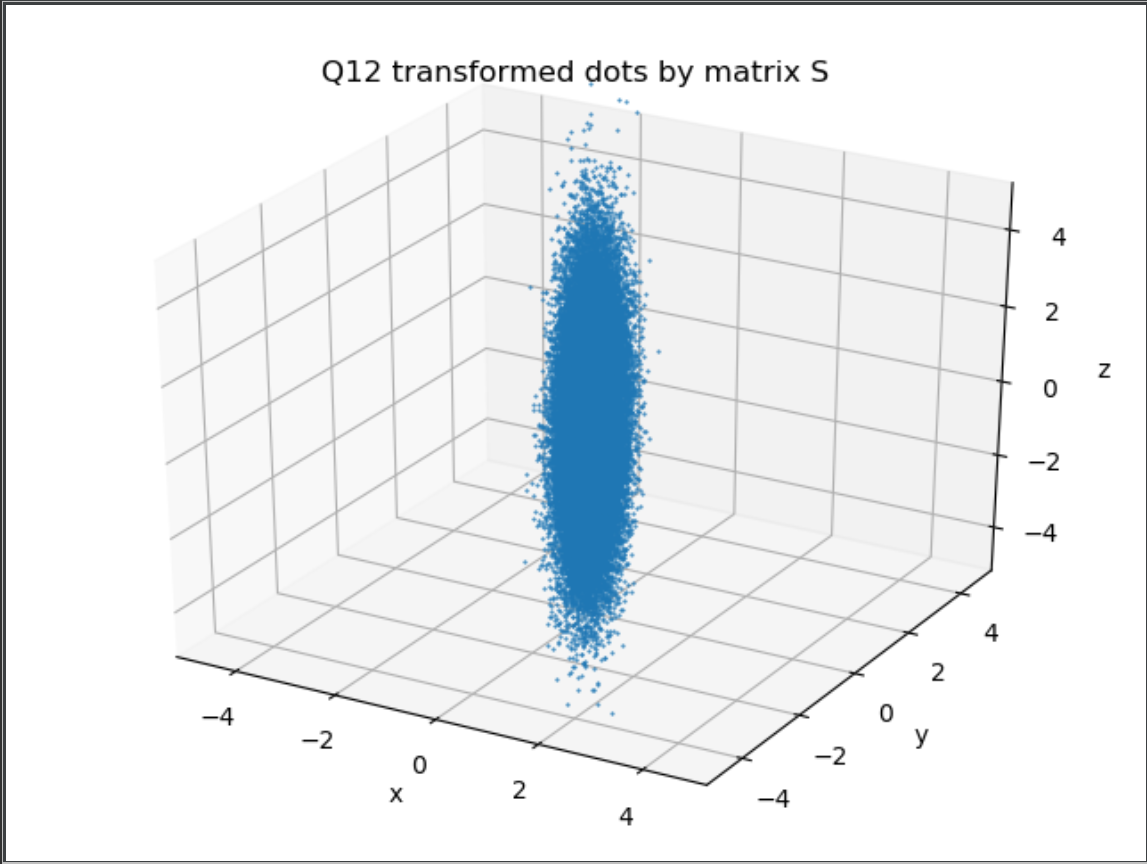
: 

1. Transformed data with scaling matrix

Analytical Cov matrix we will define as =

Numerical Cov matrix =

Plot:

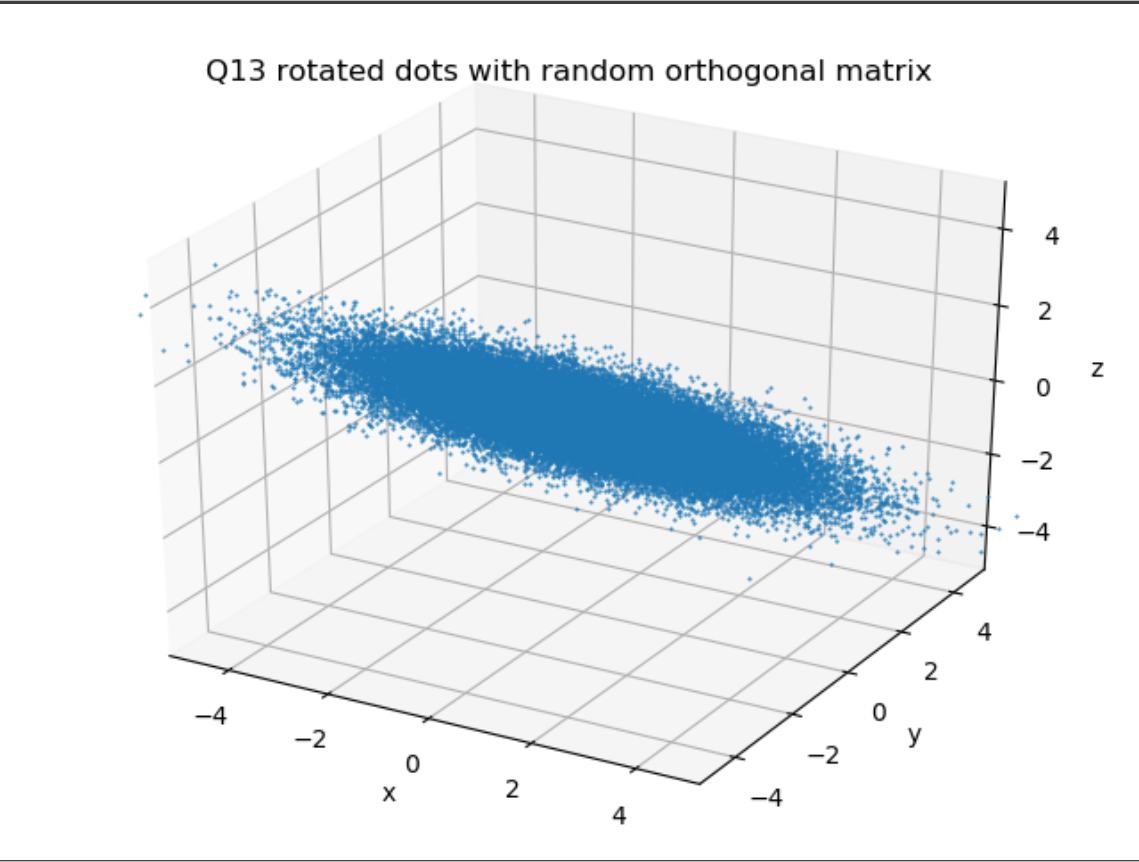
: 

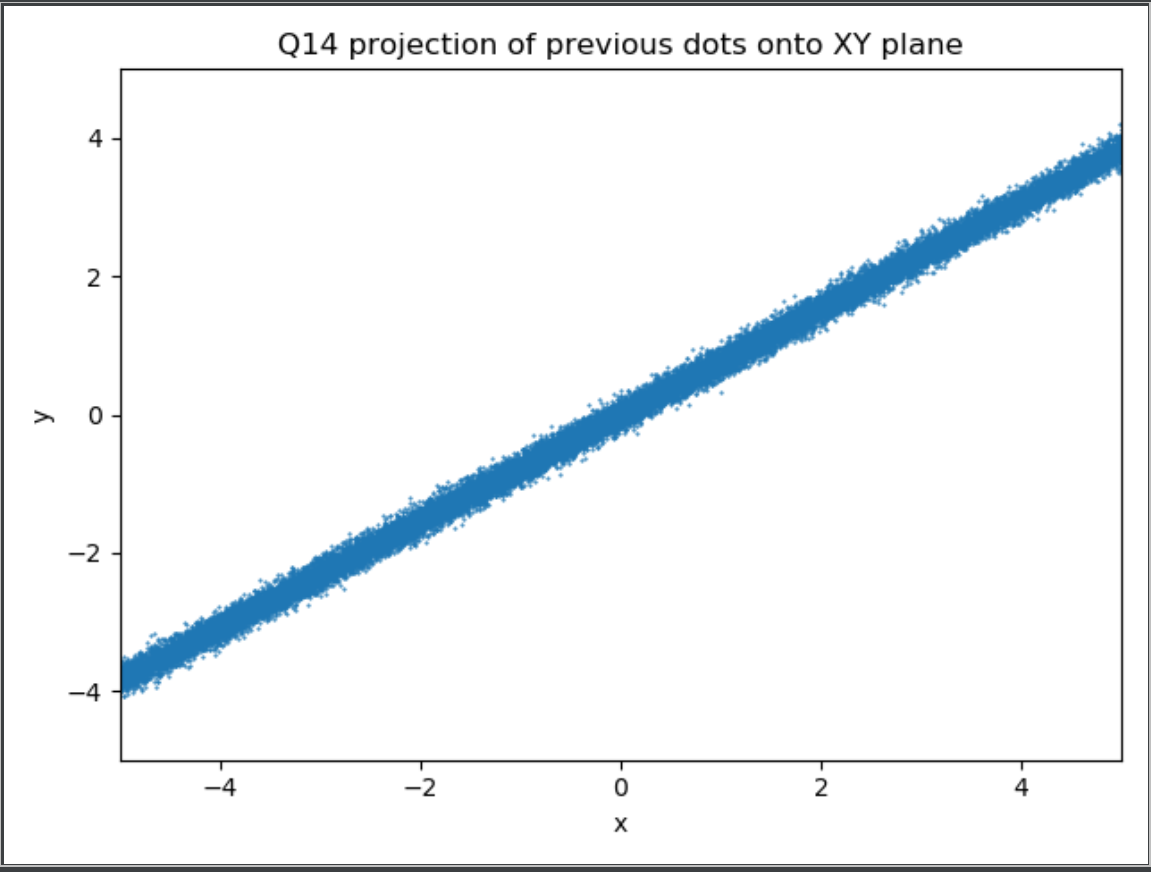
1. The random matrix I got:

Analytical Cov matrix we will define as

Numerical Cov matrix =

Plot:

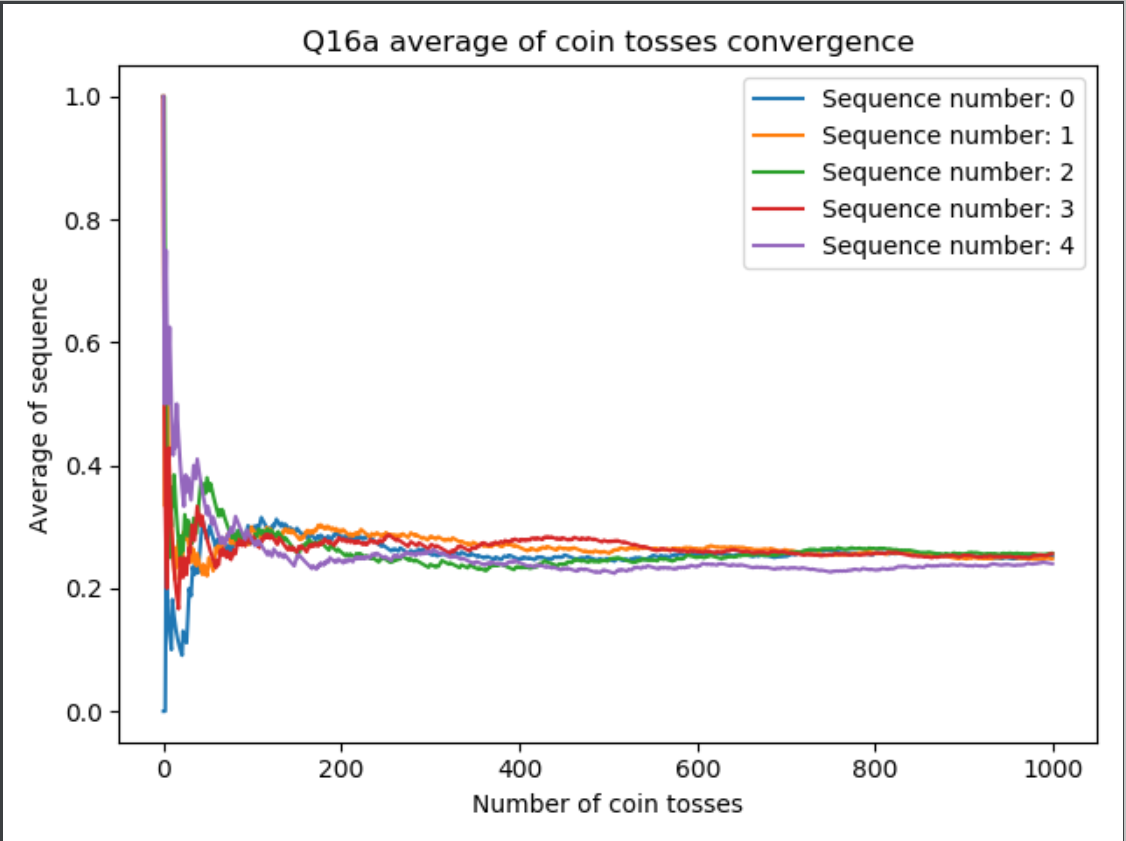


1. Plot of the previous data set projected onto the XY plane:  
   
2. Same plot as question 14 but only for Z values s.t

Plot:

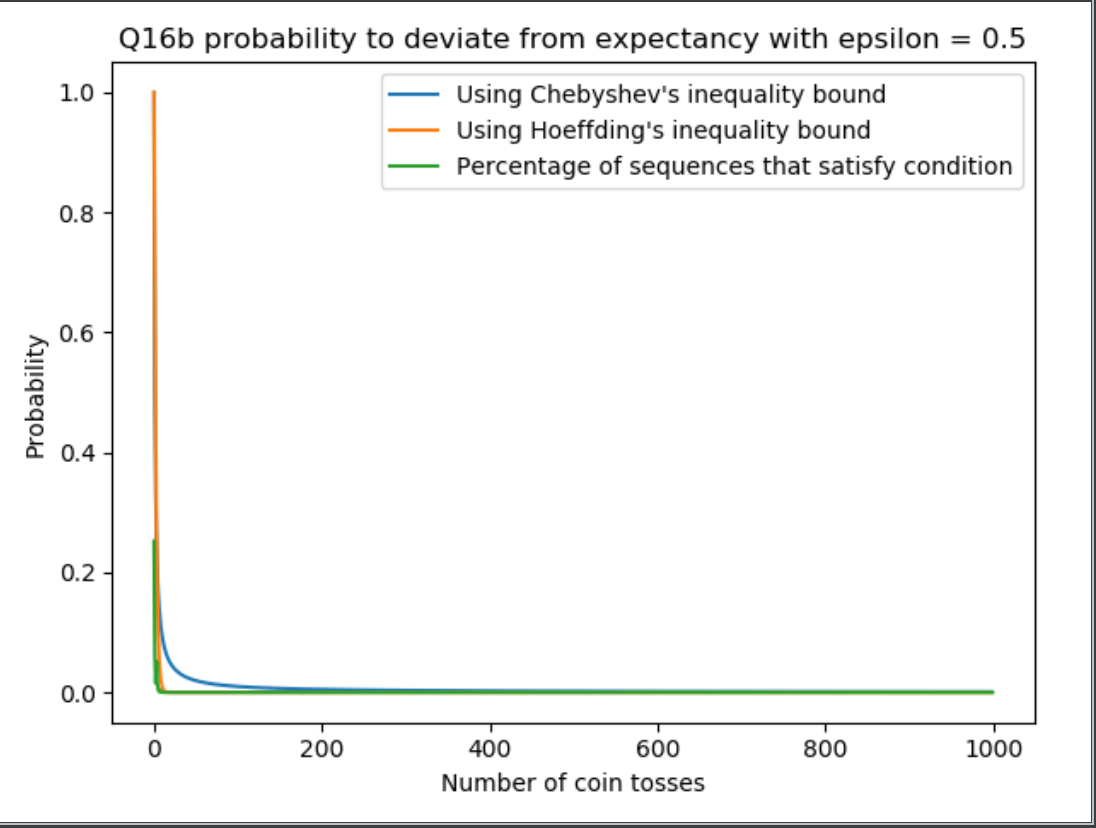
1. a.   
    Plot of the first 5 sequences of 1000 tosses, s.t the plot shown the relationship  
    between m(mean of tosses up to m) and the average of the sequences.

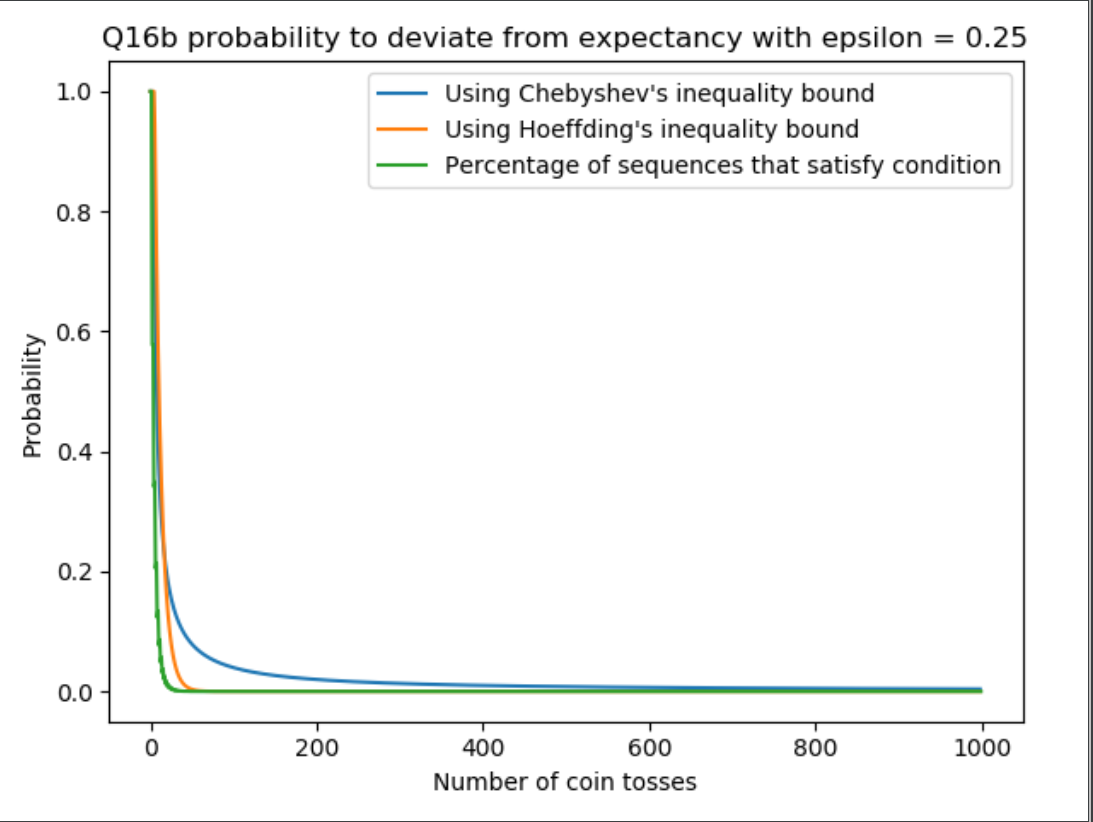
We would expect that as m grows the averages will converge, as the Weak Law of Large Numbers says, and indeed:

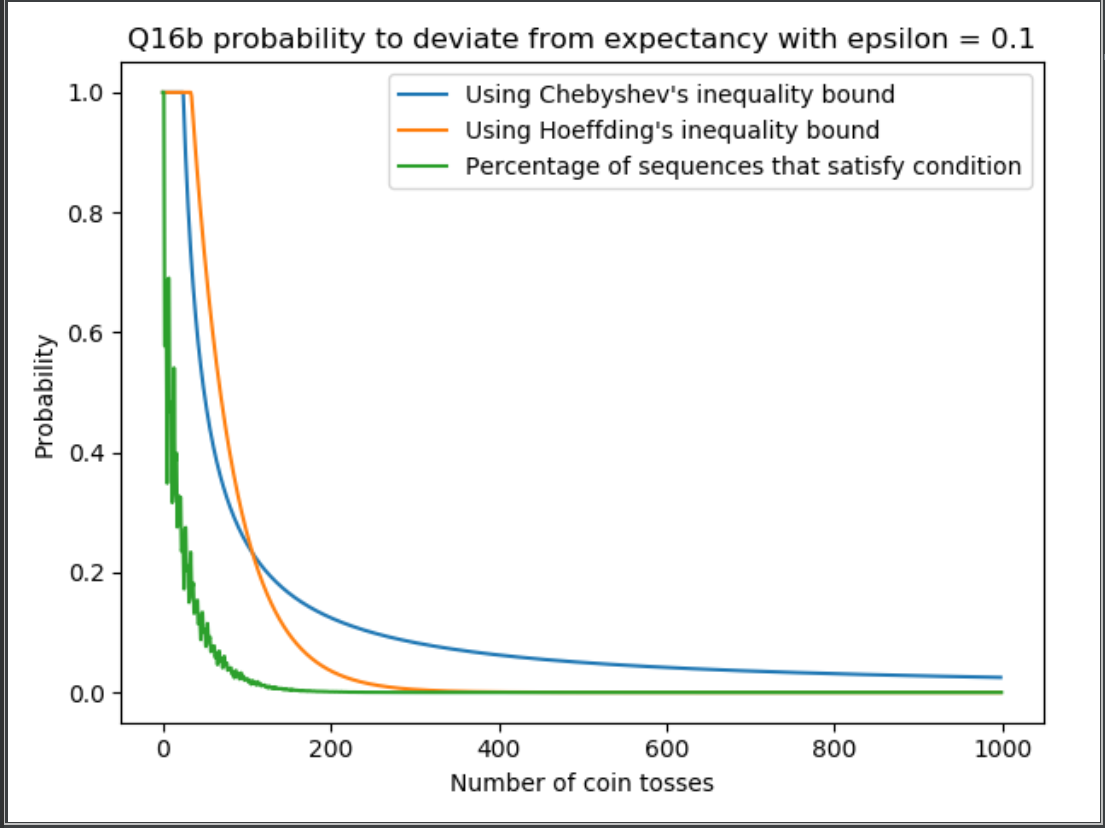


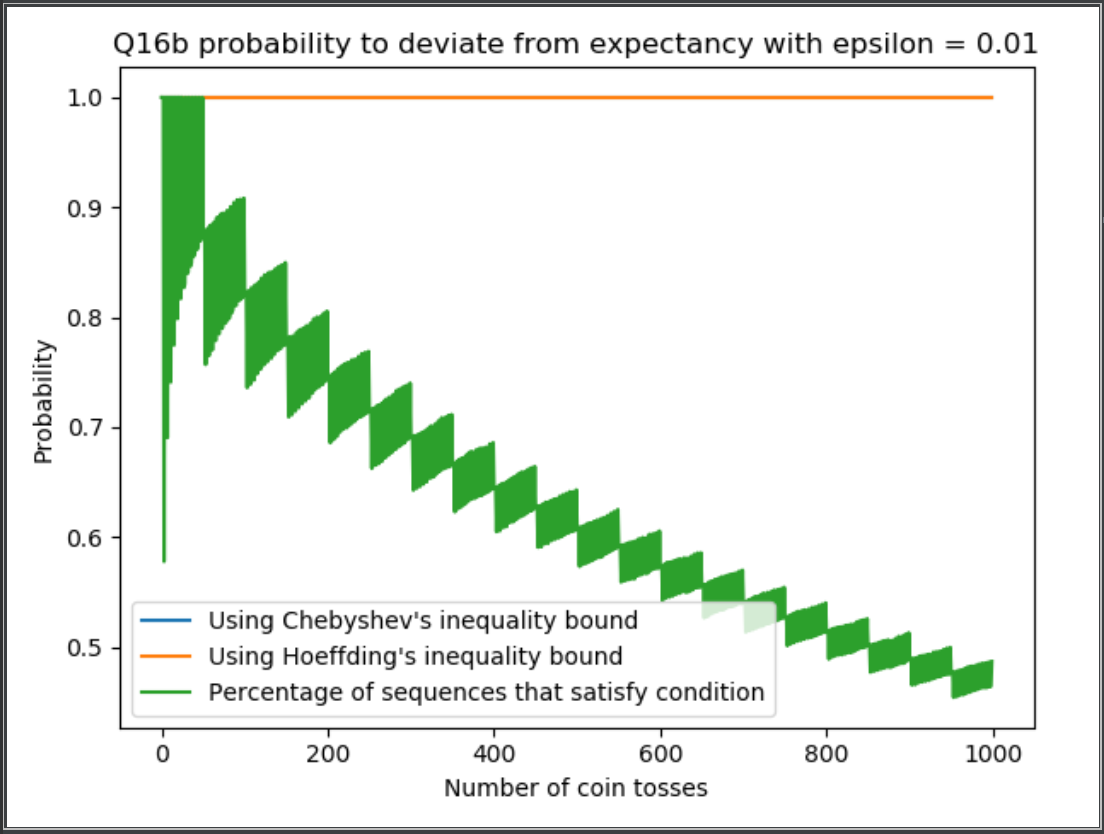
b. + c.: The plots I got in questions 16b and 16c:

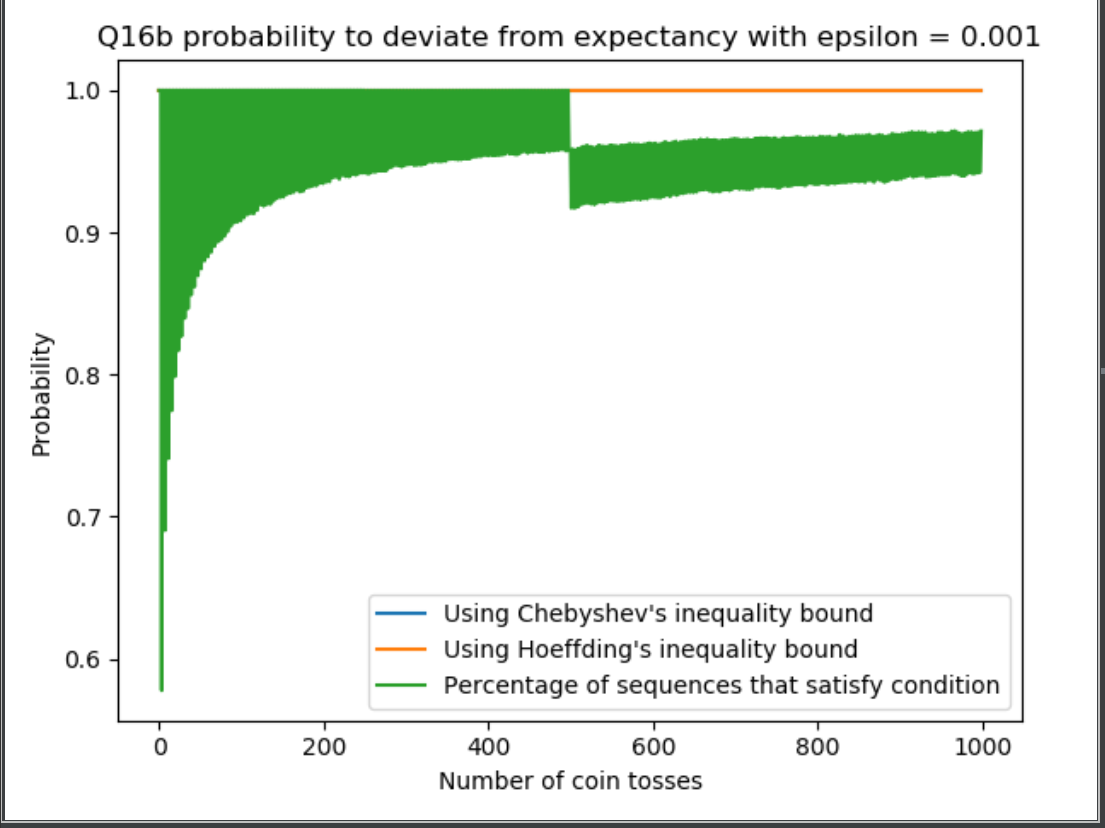
I expect that as m grows the percentage of sequences that hold the claim will decrease.



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(for clarity in the last 2 graphs the bound (orange& blue) the line is pretty much set only to 1)