

Problem Set #3

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1 Question 1

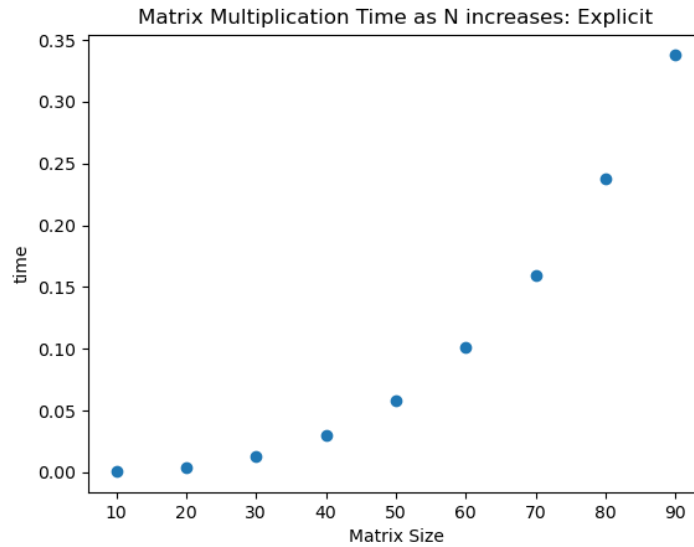


Figure 1: Using the explicit method we see that it does increase follow N^3

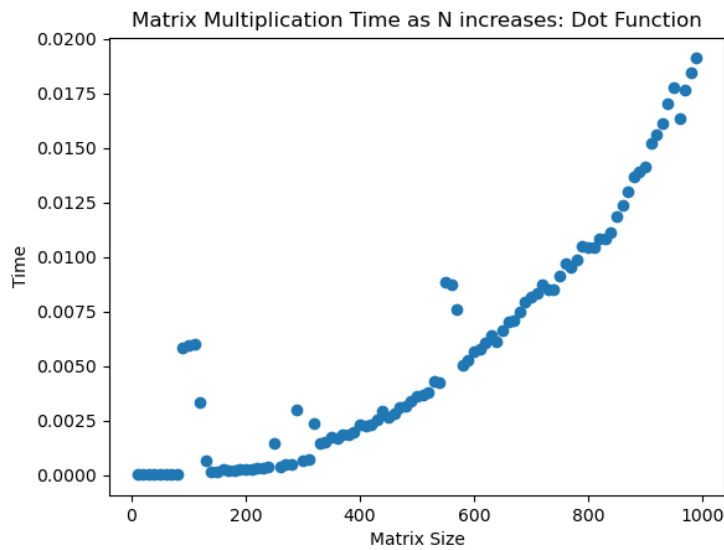


Figure 2: Using the dot method we see that it does increase following N^3 as well, however it takes it a much longer time to follow the curve, so it is the better method since it will blow up in time later.

2 Question 2

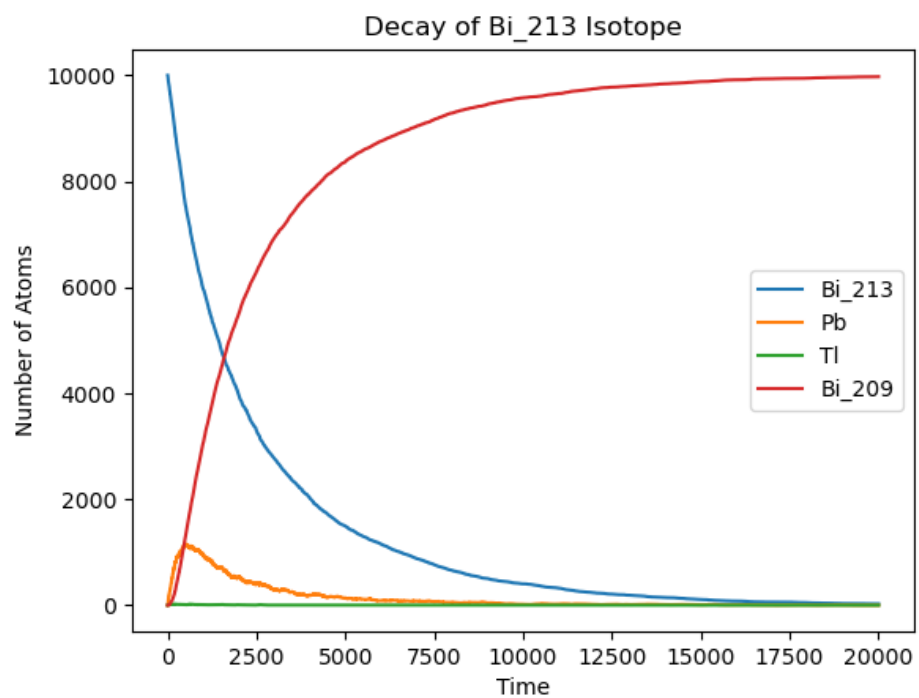


Figure 3: The decay graph of a Bi₂₁₃ isotope into Pb, Tl, and Bi₂₀₉

3 Question 3

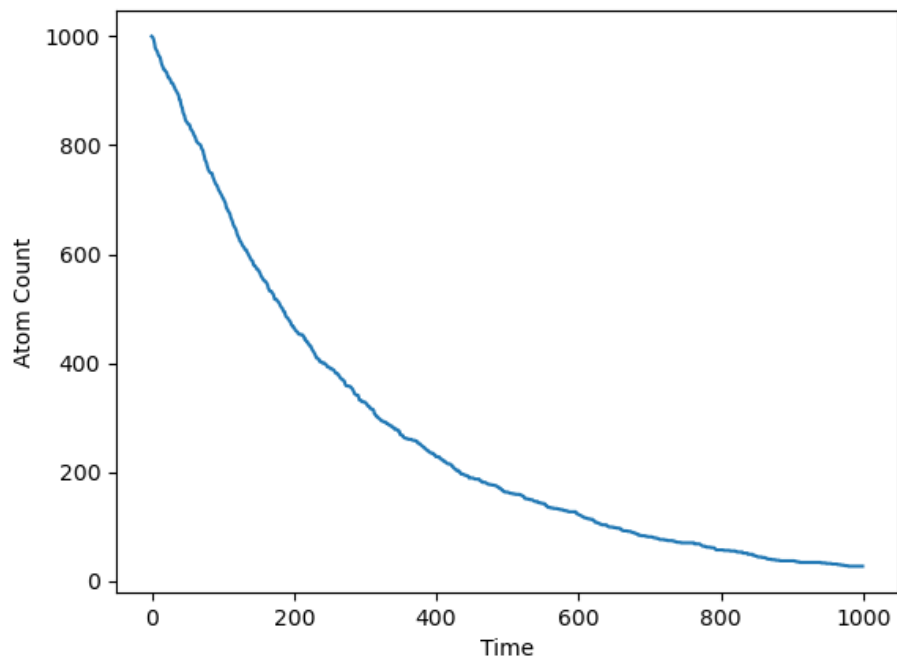


Figure 4: Plot of the thalium atoms that didn't decay

4 Question 4

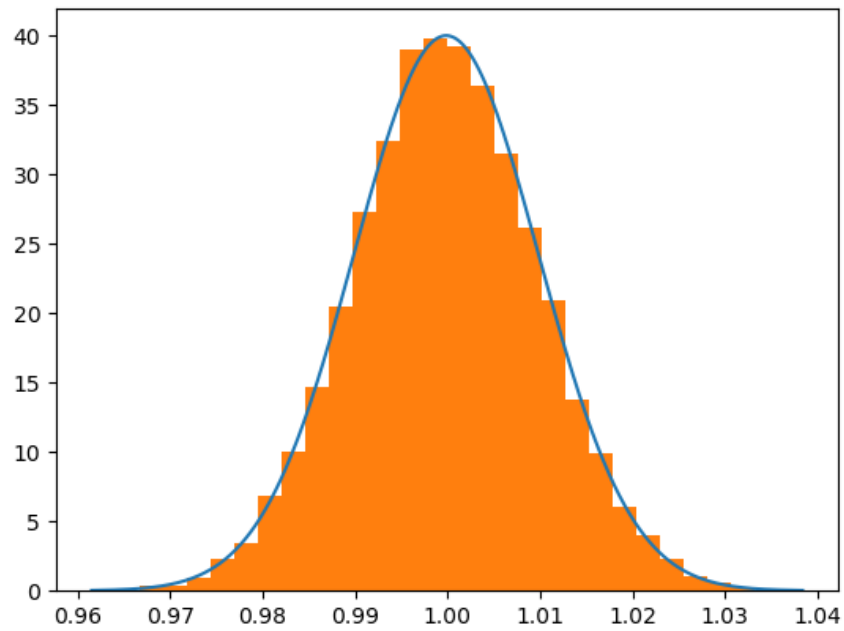


Figure 5: Showing visually that for large N the distribution tends to a Gaussian

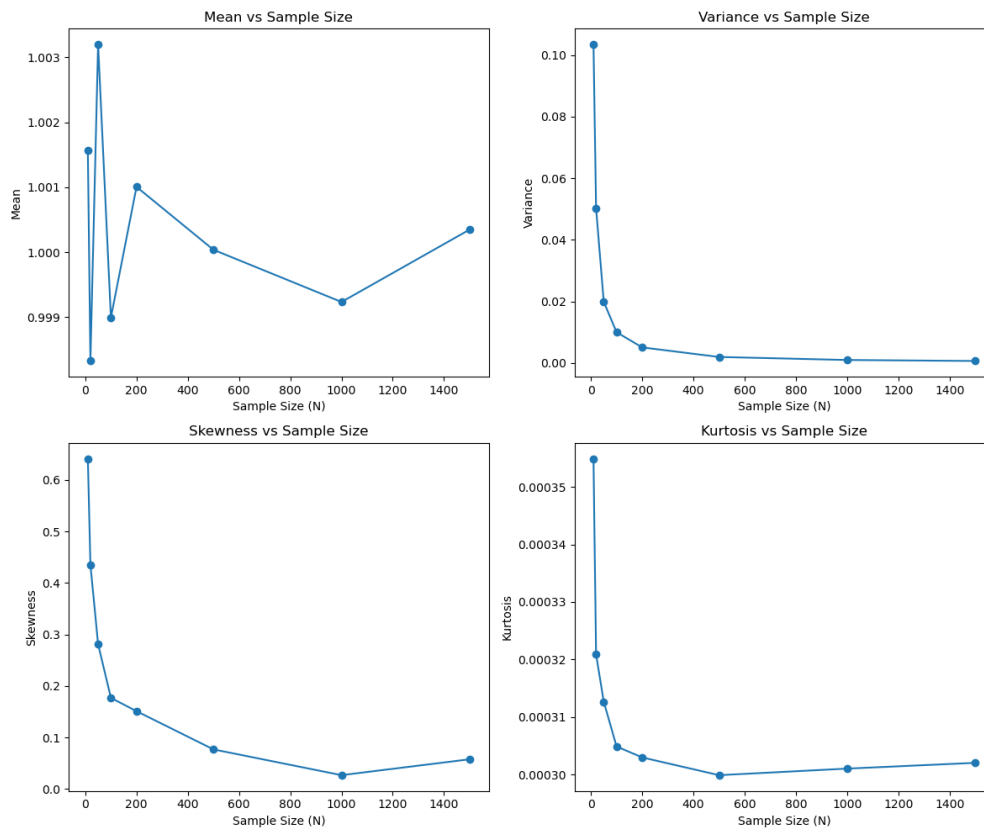


Figure 6: The mean, variance, skewness, and kurtosis of the distribution as a function of N .