Assignment Due
9:00 am EDT
Tuesday, September 25, 2018

Calculate $S_N = \sum_{i=1}^{N} [\pi + e]$.

You should use math.pi and math.e for the values of π and e. Don't add π and e together before adding them to the partial sum S_{n-1} but rather, add π to S_{n-1} and then add e to the result to form S_n.

Calculate S_N using the two methods we discussed in class, naive summation and compensated summation.   Perform the summations for $N = 10^6, 10^7,$ and 10^8 (and 10^9 if it doesn't take too long).

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Calculate the time of each summation using code such as

    start_time = time.time()

    end_time = time.time()

    elapsed time = end_time − start.time

Calculate the "exact" value of the sum using the expression

$$\tilde{S}_N = (N * \pi) + (N * e)$$

For each of the S_N that you calculate, determine the absolute and relative errors of the results. Are these errors consistent with the expressions for errors that we discussed in class?

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Include all of your analysis and discussion in your .ipynb file and submit the file thorugh Blackboard. The nume of the file you submit should be

   firstname_lastname_AS02.ipynb.

Do not clear your results after your last run so that I will be able to see your results without rerunning your file.

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