Assignment Due
9:00 am EDT
Thursday, October 4, 2018

Calculate the Taylor Polynomials $T_n(x) = \sum_{k=0}^{n} \dfrac{f^{(k)}(0)}{k!}(x)^k$

centered at 0 for the following functions at the values of x,

$x \in \left\{ \dfrac{1}{32}, \dfrac{1}{16}, \dfrac{1}{8}, \dfrac{1}{4}, \dfrac{1}{2}, 1, 2, 4 \right\}$ and for

$n \in \{1, 2, 3, 4, 8, 16, 32, 64, 128, 256\}$

$\sin(x)$

$\cos(x)$

$\exp(x)$

$\log_e(1-x) \quad x < 1$

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For each of the $T_n(x)$ that you calculate, compare the result to the exact value of the function $f(x)$ and determine the absolute and relative errors of the results. Present your results as clearly as you can (e.g., a nicely formatted table or plots(s)).

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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_AS03.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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