Assignment # 2

Question: Construct an appropriate polynomial for the following data using Newton's Divided Difference method by following the question below step by step:

1. [4 point] Using the divided-difference method for $f(x) = \sin(x)$, find the values of $a_0, \cdots, a_2$using the nodes $[0, \pi/2, \pi]$
2. [2 points] Write down the interpolating polynomial and simplify as much as possible.
3. [3 points] Add a new node $3\pi/2$to the above nodes, and find the interpolating polynomial.
4. [2 points] Write down the interpolation error term for the above polynomial, and identify the polynomial $w(x)$
5. [4 points] Estimate the interpolation error between the given function, $f(x) = \sin(x)$, and the interpolating function with four nodes.

Submission of the Assignment #2:

- Solve all the problems above.
- Prepare a title page including Your Name, Your ID#, Theory Section #.
- Prepare a single .pdf or .jpg file containing the title page and the solution pages.
- To submit your assignment solution, visit the Submission Link (Click here). This will take y

to a Google Form link.

- Fill up the Google Form link with correct information and upload the file there. You are done.

Previous

Next