

Physics 2G03 - Homework 6

1.1

Please see the source file: *ploty.cpp*

1.2

Please see the source file: *ploty.cpp*

1.3

As the value of n gets larger, I expect the value of the RMS_ERROR to get smaller. This is because increasing the value of n makes the distance between the x values smaller. Decreasing this distance makes approximating the function more accurate because the slope from x_n to x_{n+1} is more accurate.

Furthermore, when increasing the value of n , the graph created by *PGPLOT* becomes more accurate and less *jaggedy*.

The results of my program does support the statement above. If you run the respective code, and set the value of n to 20, the derivative error is 0.0812193. Changing the value of n to 80 yields a derivative error of 0.0213128. As you can see, the RMS_ERROR gets smaller when the value of n increases.

1.4

Please see the source file: *ploty.cpp*

1.5

Please see the source file: *ploty.cpp*

1.6

As the value of n gets larger, I expect the RMS_ERROR to get smaller and the approximate to become more accurate. This is because, as n gets larger, the size of the rectangles (or triangles) get more accurate and cover the correct area under its respective constraints.

Yes, the results of my program matches the above statement.