# Value of discovered tmin: 44083498

# Approached I used for the search of tmin

I approached the search for the tmin with the binary search method,

And an addition method.

#Description of my approach

My method to find the tmin, first searches for the absolute error value (ABRTE) that is less than the criteria (0.5e-14), so my method iterates in a while loop to find the value less than criteria, however, if the (ABRTE) is not

Less than criteria the size of the trapezoids increments twice the current size of trapezoids, so I multiply

N which is the size of the trapezoids by two n\* 2. When the condition is met, so when the (ABRTE) is

Less than the criteria I start the binary search method to find an (ABRTE) that is less than or equal than the criteria.

After I found the result from my method I used that number to run the trapezoid method again to get a better result.

#Problems I faced when searchin for the tmin

When I finished searching for the tmin, I noticed that sometimes the result of the (ABRTE) didn’t meet the criteria,

So this is something I had to fix in order to find a correct number of trapezoids and also that it meets the required criteria. To solve this issue, I change some of the numbers of the result of the number of trapezoids I found and

Look for a better tmin that would meet the criteria. I tried different numbers for the size of the trapezoids and this took me about an hour, sometimes during the I went back to my code I tried different sizes of t min using the number I found by using my method to get better results.

#Time it took to find my tmin

As I mentioned, once I found my tmin by running my method, I used that value to run the trap method in my code

And see if I get better results. However, this search method took me about a week, because I tried different n values based on the tmin I found and I some of them were far from criteria and some were lower, so this is a reason why I spent a lot of time searching for the approximate tmin that was less than or equal to the criteria.