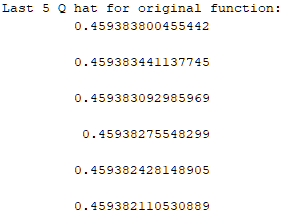
Computing Assignment 6

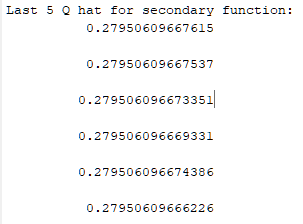
Daniel Todd

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D100

During this computing assignment I computed an approximation to the integral using a subdivision scheme, splitting the interval into subintervals defined by the zeros of , and then computing a sum of the integral of for each subinterval. I found that I could compute the integral accurate to 4 decimal spaces using this method. I then improved my approximation by implementing the Aitken’s method, and found that for N = 7000, I could get accurate up to 6 decimal spaces. I picked N = 7000 as this is the highest N I can compute for within reasonable time. My estimate for the integral is , based on the output from my code pasted below. I chose to state 6 digits of accuracy, as for the last 5 iterations of my code, the 6th digit remained unchanged, while the 7th digit and beyond changed.



 I then modified my code to compute the integral . I did this by attempting to find the zeros for , which I did by first observing that when . Knowing that when , I reasoned that the zeros of are where . It then follows that for zeros and as such . Then, letting we get , , and . Then, calculating for N = 20,000 I get , which is accurate up to 10 decimal spaces. The output from my program for the calculation of is pasted below.