A short lecture series on Contour Integration in the Complex Plane
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Lecture - 25
Summary of the total course

So, you must have gone through the lectures on complex variables with a focus on Contour Integration. So, I will just summarize what I did, ok.

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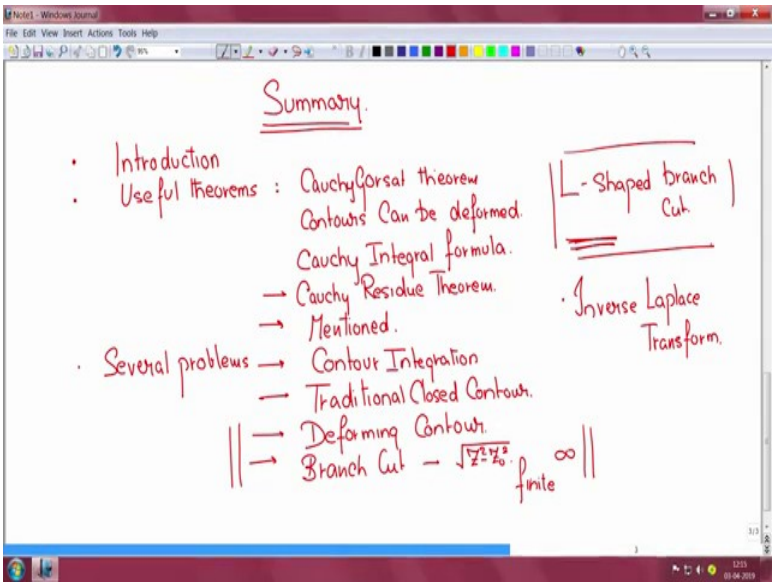

We went through a brief intro to complex variables introduction, then very quickly we saw a few useful theorems, ok. One of them being the important Cauchy Gorsat theorem; Cauchy Gorsat theorem, which also gave us the knowledge that contours can be deformed; contours can be deformed. Then we saw the Cauchy integral formula, sorry Cauchy integral formula and a brief mention of the Cauchy residue theorem, and several useful theorems which were merely mentioned while doing the problems, ok.

Then in actuality we did several problems which required contour integration or which were solved using contour integration, ok. One or two problems were done using two different methods, one using a traditional closed contour; traditional closed contour, the other by deforming the contour; deforming the contour, ok. Then we saw about three or four examples that had a branch cut, this is very important. All of them related to this

square root function Z square minus Z0 square type, square root function, ok. We saw branch cuts that were infinite in length, we saw branch cuts that were finite in length, ok.

So, this is the most important crux of the set of lectures, then I closed with a L shaped branch cut; L shaped branch cut which is rarely presented in textbooks, ok. So, in here also it is meant as a research topic not as a classroom topic, but since the occasion arose I presented how one could come across an L shaped branch cut, so that students get exposure.

And finally, I closed with inverse Laplace transform; inverse Laplace transform. In classrooms this transform is done by looking at tables, ok, but this also requires contour integration. So, I gave an example of how the inverse is computed using contour integration. So, that is the full spectrum of the lecture series.

Thank you.