The Cauchy Integral Formula

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A slide with a definition and a theorem

Definition

The residue of an analytic function f at an isolated singularity a is equal to the coefficient of $(z-a)^{-1}$ in the Laurent expansion for f about the point a.

Theorem

If $P(z)$ and $Q(z)$ are complex polynomials such that the degree of P is at least two less than the degree of Q, and Q has no zeroes on the real line, then

$$\int_{-\infty}^{\infty} \frac{P(t)}{Q(t)}\,dt = 2\pi i \sum_{j=1}^{N} Res_{\,a_j} \frac{P}{Q},$$

where $\{a_j\}_{j=1}^{N}$ are the distinct zeroes of Q in the Upper Half Plane (UHP).

Cauchy Integral Formula basics

I'm using the enumerate environment on this slide.

1. The Cauchy Integral Formula was discovered by Cauchy.
2. It reveals that an analytic fucntion is determined by its values on a rather small set.
3. Some people think it is the best formula around.

Push **Control-L** to enter Full Screen mode and use the left and right arrow keys to move through the demo.

Cauchy Integral Formula basics

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Cauchy Integral Formula basics

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- The Cauchy Integral Formula was discovered by Cauchy.
- It reveals that an analytic fucntion is determined by its values on a rather small set.
- Some people think it is the best formula around.

The Cauchy Integral Formula in living color

You can do silly things in Beamer that will make you look like an idiot. For example:

The *Cauchy Integral Formula* in three different colors:

$$f(a) = \frac{1}{2\pi} \int_\gamma \frac{f(z)}{z-a}\, dz$$

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Tic-Tac-Toe via tabular

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Future research.

This last slide does not have a title to demonstrate that you don't have to have that big blue text at the top of each slide.

Push the ESCAPE key to get out of Full Screen mode.