

Things to Consider For the Final Reading (Thursday, June 24) on the Fundamental Theorem of Algebra

Mathematicians love to prove that solutions to equations exist. To appreciate how significant this result is, you have to be in their mindset.

In preparation for your final reading (Courant & Hilbert Section II.5.4):

- * Go back to Chapter 7, review Theorem 9
- * Then review Theorem 10. Can you see how this can be turned into a proof that if n is an even number (2, 4, 6, etc.) then $f(x)-c$ has a zero for some sufficiently large c ?
- * Finally, having contemplated how little we have been able to prove about the solutions of polynomial equations, read Courant & Hilbert Section II.5.4.

Can you summarize how much has been achieved by introducing the complex numbers? Can you see that there are similarities between the Proof of Chapter 7 Theorem 9 and Courant & Hilbert Section II.5.4?

The proof is by Gauss in 1799. He was 22!