Mathematics Research Experience for Undergraduates at Amherst College, Summer 2026

Description: Prof. Rob Benedetto invites two Amherst College students to work with him for **8 weeks** in Summer 2026 on a Mathematics REU (Research Experience for Undergraduates) project, on certain topics in **Arithmetic Dynamics**, a subfield of Number Theory.

Dates: Monday, June 8 to Friday, July 31. The first two weeks will be spent learning relevant background material, and the rest will be devoted to research.

Funding and Housing: Participants will be paid a stipend of $700 per week for the 8 weeks ($5,600 total), plus funds to pay for the cost of a dorm room and meal plan on campus. Participants must apply for Amherst College housing themselves.

Prerequisites: Participants must have taken, and demonstrated strong ability in, Math 350 (Groups, Rings and Fields) before the start of the project. **Preference will be given to students who have also done well in other courses in pure mathematics, especially at the 300-level or higher**.

Eligibility: This project will be funded by the National Science Foundation (NSF). NSF funding rules for REU projects state that participants must be **US citizens or permanent residents**, and must be **current undergraduate students** (e.g., no 2026 graduates). The program is a full-time commitment (40 hours per week).

To apply: Do BOTH of the following:

1. Apply to job posting **JR6652** (Summer Math Researcher) on Workday, and
2. Email Prof. Benedetto at `rlbenedetto@amherst.edu` providing both:
   (a) An unofficial transcript (a PDF of which you should be able to obtain via Workday)
   (b) The names of two Amherst math professors (or former Amherst math professors) you have taken courses from or worked closely with. (No rec letters required.)

Application Deadline: Friday, February 13, 2026.

Accepted applicants will have until Friday, March 6, 2026 to accept or decline their offers.

Topic: Let $f(x) \in \mathbb{Q}[x]$ be a polynomial of degree $d \geq 2$ with rational coefficients, and let $a \in \mathbb{Q}$. What is the smallest field that contains all d points of the inverse image $f^{-1}(a)$? What about the d^2 points in the second inverse image $f^{-2}(a)$? And in general, what can we say about the smallest field K_n containing all d^n points of $f^{-n}(a)$? One key object of interest is the *Galois group* G_n associated with the field K_n. The group G_n permutes the d^n elements of $f^{-n}(a)$. A central aim of this project will be to understand how G_n acts on these d^n elements in various special cases.