CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY

Name(s)

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Project Number

S1217

Project Title

Numerical Fulcrums and Prime of the Form k^2+1

Abstract

Objectives/Goals

It has not yet been proven in mathematics if there exists an infinite number of primes of the form k^2+1, where k is a positive integer. With the exception of the integer two, any prime of the form k^2+1 must also be of the form 4n^2+1, because k^2+1 must be odd so k must be even and k^2+1=(2n)^2+1=4n^2+1.

Results

This project deals with a special type of integers called "numerical fulcrums" and proves that the list of all positive integers which are not numerical fulcrums are integers n which yield a prime number in the function 4n^2+1.

Conclusions/Discussion

Numerical fulcrums could quite possibly be used some day to help solve the conjecture that there exist an infinite number of primes of the form k^2+1.

Summary Statement

Results from this project prove that numerical fulcrums, defined by the student, are related to the set of prime numbers of the form k^2+1

Help Received