Pierre De Fermat Essay, Research Paper

Pierre de Fermat

Pierre de Fermat was born in the year 1601 in Beaumont-de-Lomages, France. Mr. Fermat’s education began in 1631. He was home schooled. Mr. Fermat was a single man through his life. Pierre de Fermat, like many mathematicians of the early 17th century, found solutions to the four major problems that created a form of math called calculus. Before Sir Isaac Newton was even born, Fermat found a method for finding the tangent to a curve. He tried different ways in math to improve the system. This was his occupation.

Mr. Fermat was a good scholar, and amused himself by restoring the work of Apollonius on plane loci. Mr. Fermat published only a few papers in his lifetime and gave no systematic exposition of his methods. He had a habit of scribbling notes in the margins of books or in letters rather than publishing them. He was modest because he thought if he published his theorems the people would not believe them. He did not seem to have the intention to publish his papers. It is probable that he revised his notes as the occasion required. His published works represent the final form of his research, and therefore cannot be dated earlier than 1660.

Mr. Pierre de Fermat discovered many things in his lifetime. Some things that he did include:

-If p is a prime and a is a prime to p then ap-1-1 is divisible by p, that is, ap-1-1=0 (mod p). The proof of this, first given by Euler, was known quite well. A more general theorem is that a0-(n)-1=0 (mod n), where a is prime to n and p(n) is the number of integers less than n and prime to it.

-An odd prime number can be expressed as the difference of two square integers in only one way. Fermat’s proof is as follows. Let n be prime, and suppose it is equal to x2 -y2 that is, to (x+y)(x-y). Now, by hypothesis, the only basic, integral factors of n and n and unity, hence x+y=n and x-y=1. Solving these equations we get x=1 /2 (n+1) and y=1 /2(n-1).

-He gave a proof of the statement made by Diophantus that the sum of the squares of two numbers cannot be the form of 4n-1. He added a corollary which I take to mean that it is impossible that the product of a square and a prime form 4n-1[even if multiplied by a number that is prime to the latter], can be either a square or the sum of two squares. For example, 44 is a multiple of 11(which is of the form 4 x 3 – 1) by 4, therefore it cannot be expressed as the sum of two squares. He also stated that a number of the form a2 +b2, where a is prime b, cannot be divided by a prime of the form 4n-1.

-Every prime of the form 4n+1 is accurate as the sum of two squares. This problem was first solved by Euler, who showed that a number of the form 2(4n+1) can be always showen as the sum of two squares, of course it was Mr. Pierre de Fermat.

-If a, b, c, are integers, a2 + b2= c2, then ab cannot be a square. Lagrange solved this.

- The determination of a number x such that x2n+1 may be squared, where n is a given integer which is not squared. Lagrange gave a solution of this also.

-There is only one integral solution of the equation x2 +4=y3. The required solutions are clearly for the first equation x=5, and for the second equation x=2and x=11. This question was issued as a challenge to the English mathematicians Wallis and Digby.

-No basic values of x, y, z can be found to satisfy the equation xn+yn=zn; if n is an integer greater than 2. This thesis has achieved extraordinary celebrity from the fact that no general demonstration of it has been given, but there is no reason to doubt that this true.

-Fermat also discovered the general theorem that was on the guess that a number can be found into the product of powers of primes in only one way.

These were some interesting things that Mr. Fermat did in his life.

During Mr. Fermat’s life many things happened as world events. First Ludolph Van Ceulen died, there is a site dedicated to this long-ignored mathematician, who spent his entire life, approximating Pi to 35 places. Then Blaise Pascal lived his entire life, born in 1623 and died in 1662. Next Sir Isaac Newton was born in the year 1642. Then Marin Mersenne, French philosopher, mathematician, Jesuit theologian, and scientist died in the year 1648. Finally Mr. Pierre de Fermat died in the year 1665. Some of the most striking results were discovered after his death on loose sheets of paper or written in the margins of works which he had read and annotated. These annotations are unsupported by proof. Scholars cannot say that Mr. Fermat’s theorems are positive until proof is found.

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