

Fibonacci Sequence

The Fibonacci sequence is a famous recursive sequence which is generated by adding two successive terms together to produce the next term. (after starting with 1 , 1)

The sequence is: 1 , 1 , 2 , 3 , 5 , 8 , 13 , 21 , 34 ,

A famous French Mathematician, Joseph Lagrange, discovered that a pattern based on the Fibonacci sequence can be generated by dividing each term by 4 and noting the remainders.

Find the remainders when the first 15 terms of the Fibonacci sequence are divided by 4. For example, $13 \div 4$ has a remainder of 1.

Hence determine the remainder when the 2007th term of the Fibonacci sequence is divided by 4.