

Proof by Complete Induction:

Math 135: First Steps into Advanced Mathematics

You may recall that the Fibonacci sequence is a sequence of natural numbers such that the n th Fibonacci number, f_n , is defined by $f_1 = 1$, $f_2 = 1$, and $f_n = f_{n-1} + f_{n-2}$ for $n \geq 3$. Prove using complete induction that $f_{n+6} = 4f_{n+3} + f_n$ for all $n \in \mathbb{N}$.