

HOMEWORK 6
Due: Monday, May 21

READING ASSIGNMENT: 5.3, 5.4

PROBLEMS FROM THE NOTES: 5.3.1, 5.3.2, 5.4.1, 5.4.3

ADDITIONAL PROBLEMS:

Problem 1: Recall the Fibonacci sequence $\{F_n : n \geq 1\}$ defined in class.

- (a) Prove or disprove: There are only finitely many even Fibonacci numbers.
- (b) Prove or disprove: For all $n \geq 1$, we have $F_n \leq 2^n$.
- (c) Prove or disprove: For all $n \geq 1$, we have $F_n \leq n^2$.

Problem 2: Prove by minimum counterexample the following statement:

“for all natural number n , 7 divides $2^{n+2} + 3^{2n+1}$.”

Can you prove the above statement by induction? Here 0 is a natural number.