

Group Work  
Chapter 9.1-9.2

- 1.) If  $F_{31}=1,346,269$  and  $F_{33}=3,524,578$ , find  $F_{32}$  and  $F_{34}$ .
  
- 2.) Write each of the following numbers as the sum of distinct Fibonacci numbers.
  - a.) 52
  - b.) 53
  - c.) 107
  - d.) 112
  
- 3.) Use this formula:  $\phi^N = F_N\phi + F_{N-1}$  to express the following powers of  $\phi$ . You don't need a calculator.
  - a.)  $\phi^6$
  - b.)  $\phi^{15}$
  
- 4.) Since each Fibonacci number is close to  $\phi$  times the previous Fibonacci number, we can approximate Fibonacci numbers pretty easily. If  $F_{1002}$  is close to  $1.138 \times 10^{209}$ , find an approximate value for  $F_{1003}$ . How about  $F_{1001}$ ?
  
- 5.) The *Fibonacci sequence of order 3* is the sequence 1, 3, 10, 33, 109, ... . It uses the rule  $A_N = 3A_{N-1} + A_{N-2}$  ( $N \geq 3$ ).
  - a.) Find  $A_6$
  - b.) Use a calculator to compute the ratio  $A_N/A_{N-1}$  for  $N \leq 6$ .
  - c.) Guess the value (to 5 decimal places) of the ration  $A_N/A_{N-1}$  when  $N > 6$ .