

**CSci 1302 Assignment 9**  
**Due Wednesday, April 1 in class**

**Problem 1 (2 points).** Exercise 27 p. 234.

**Problem 2 (5 points).** Fibonacci numbers are defined as  $F_0 = 0, F_1 = 1$ , and for all  $k \geq 2$   $F_k = F_{k-1} + F_{k-2}$ . Use strong induction to prove the following property of Fibonacci numbers:  $F_{n+m-2} = F_n F_{m-1} + F_{n-1} F_{m-2}$ . Here  $n \geq 2, m \geq 2$ . Please point out the part of the proof where you had to use strong induction.

Hint: you should do induction on  $n$  only and assume that  $m$  is fixed. The other way around (induction on  $m$  with  $n$  fixed) should work as well, but you cannot do induction on both.

**Problem 3 (10 points).** Exercises 2, 3, 6 (note that  $\lfloor k/2 \rfloor$  denotes  $k/2$  rounded down), 16 pp. 242-243.