

Math 192r, Problem Set #3
(due 9/18/03)

1. (a) Consider the sequence 1, 1, 1, 3, 3, 7, 9, 17, 25, ... satisfying the initial conditions $a_0 = a_1 = a_2 = 1$ and the recurrence relation $a_n = 2a_{n-2} + a_{n-3}$. Write the generating function $A(x) = \sum_{n=0}^{\infty} a_n x^n$ as a rational function of x , expressed in simplest terms.
- (b) Find an exact formula for a_n .
- (c) Why did I use the recurrence $a_n = 2a_{n-2} + a_{n-3}$ for this problem instead of the more natural “Tribonacci” recurrence $a_n = a_{n-1} + a_{n-2} + a_{n-3}$?

Please be sure to write down how many hours you spent working on the problems, and whom you worked with.