Notes

April 30, 2014

counting formula $R_n = \sum_{r=0}^{n} \frac{1}{n-r+1}\binom{2n-r}{r,n-r,n-r}$ where r=flat steps, and R_n is number of large shroder paths.

$R_n = 2s_{n+1}$ s are dissections/small shrodinger paths

7.1/2

fibanocci numbers

$$f_n = f_{n-1} + f_{n-2}, f_0 = 1, f_1 = 1$$

partial sums

$$s_n = f_0 + \cdots + f_n = f_{n+2} - 1$$

proof by induction
even odd odd patter
using f_n's to solve covering 2xn chessboard problems.
fibonacci numbersare sum pascal triangle diagonal
generating functions

$$g(x) = \sum_{n=0}^{\infty} h_n x^n$$

derive recurrence, use recurrence use reg generating functions for combination like things

7.3

exponential generating functions use for counting permutation like things. need to be able to find a generating function and use it to find a counting formula.

7.4/5

solving recurrence relations and ....
know if it's linear, homogeneous, constant coefficients.
method of generating functions know this.
also can find general solution to homogen, find particular solution, combine solutions and determince constants.

7.6/8.1

catalan stuff. catalan number is $C_n = \frac{1}{n+1}\binom{2n}{n}$
say what is counted, give bijections. say why it's a bijection.

8.2

8.3

self conjugate partitions, and partitions with only odd parts.
odd and distinct

8.5