

MATH 636, Fall 2015

HOMEWORK 10

To be prepared for presentation on Tuesday, October 27.

Background reading: Combinatorics: A Guided Tour, Sections 3.4 and 3.5.

Only consult with your classmates or professor to discuss the problem set.

We will discuss solutions to these questions in class.

Feel free to use *Wolfram Alpha* or *Mathematica* to look at the coefficients of this generating function.

Recall that the Mathematica command to find the coefficients of the generating function from class is: `Series[1/(1-x)/(1-x^2)/(1-x^3), {x, 0, 98}]`

- 10-1.** Complete Exercise 3.6.4. (In this question, give the explicit formula for a_n as a function of n using the recurrence relation techniques we learned in class.)
- 10-2.** Complete Exercise 3.5.5. Use a combinatorial proof to prove part (b). Then in part (c), prove the formula for $G(x)$ using the recurrence formula from part (b) and the initial conditions from part (a).