MATH3250 COMBINATORICS READING HW 8

Instruction. Please submit all sections. Because you will be doing a lot of arithmetic, it might be more convenient to do this homework by hand.

Go to Sec 8.1.1 and Sec 8.1.2 of Bóna's "A Walk through Combinatorics" textbook, pg. 163–172.

Review

Optional: Read pages 163–167, including Example 8.1 (given as lectures on Tuesday, Feb 25).

1. Example 8.2

a. Attempt the problem of Example 8.2 (page 167) using generating function method without reading the solution.

  Note: You can use software to compute the partial fraction (see part 4 of the solution). On WolframAlpha, you can type
$$\texttt{partial fraction 500x/(1-x)(1-1.05x).}$$
b. Check the solution in the textbook, and write the correct solution. Include details skipped by the textbook.
c. Questions and comments?

2. Example 8.3

a. Attempt the problem of Example 8.3 (page 168) using generating function method without reading the solution.

  Note: You can use software to compute the partial fraction (see part 4 of the solution). On WolframAlpha, you can type
$$\texttt{partial fraction x/(x-1)(2x-1).}$$
b. Check the solution in the textbook, and write the correct solution. Include details skipped by the textbook.
c. Questions and comments?

3. Lemma 8.4 Coefficients of the product of two power series

i. Read Lemma 8.4 several times, until you understand the statement. Then write down the statement of the lemma.
ii. Write down the proof of Lemma 8.4

4. Theorem 8.5 The Product Formula

i. Read Theorem 8.5 many times, until you understand the statement. Then write down the statement of the theorem.

  Read the statement of the theorem several more times.
ii. Write down the proof of Theorem 8.5.

5. Example 8.6, 8.7

i. Read the problem and solution of Example 8.6 or 8.7 many times, until you understand at least part of the solution. Then write down the problem given in Example 8.6.

ii. Write down the solution of Example 8.6 given in the book.
iii. Comments and questions?

6. Survey

i. Approximately how much time did you spend on this homework?
ii. Questions or comments about this homework?