Math 4370   **COMBINATORICS**   Spring 2012
Dr. Duval   **Homework**
Thursday, February 16
Follow the separate general guidelines for Parts A,B,C. Be sure to include and label *all four* standard parts (a), (b), (c), (d) of Part A in what you hand in.

**Nonincreasing finite sequences of integers
(and some Ferrers shapes)**
Subsection 2.3.1 (and Subsection 2.3.2 up to and including Example 2.23)

A: Reading questions. Due by 3pm, Mon., 27 Feb.

1. What is the difference between a **partition** of an integer, and a **composition** of that integer? What is the difference between a partition of an **integer** and a partition of a **set**?

2. Verify the entries for $p(5)$ and $p(6)$ in Figure 2.4 by explicitly listing partitions. (This is similar to Example 2.20.)

3. What does $p_k(n)$ count? Compute $p_3(6)$ by explicitly listing partitions.

4. Translate the rule for partitions of integers into a rule for Ferrers shapes: Describe a rule for how you are allowed to arrange the boxes in a Ferrers shape without using the language of partitions. What sort of arrangement of boxes is **not** allowed in a Ferrers shape?

5. Draw the Ferrers shape for the partition $(6, 4, 3, 1)$ and use this shape to find the conjugate of the partition.

B: Warmup exercises. For you to present in class. Due by the end of class Tue., 28 Feb.

1. **2.10 Supplementary Exercise:** 16, 17, 18, 20