

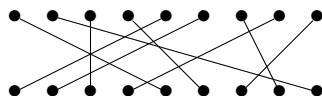
Math 4140: Homework 9

Due: March 30, 2011

Required

1. Warm-up. In the RSK correspondence,

(a) Which pair of tableaux corresponds to the permutation



(b) Which permutation of S_{10} corresponds to the pair of tableaux

$$\left(\begin{array}{|c|c|c|c|} \hline 1 & 3 & 5 & 7 \\ \hline 2 & 4 & 8 & 9 \\ \hline 6 & & & \\ \hline 10 & & & \\ \hline \end{array}, \begin{array}{|c|c|c|c|} \hline 1 & 4 & 6 & 7 \\ \hline 2 & 5 & 9 & 10 \\ \hline 3 & & & \\ \hline 8 & & & \\ \hline \end{array} \right)$$

2. For each of the following situations come up with a conjecture for what is going on and supply an example that gives evidence to your conjecture (you do not need to prove your conjectures). For all of the following (P, Q) corresponds to w in the RSK correspondence.

- What does the length of the longest row of P say about the permutation w ?
- What is the relationship between w and the permutation corresponding to (Q, P) ?
- What characteristic does w have if $P = Q$ (your answer to (c) should help with this one)?

3. Decide on a project.