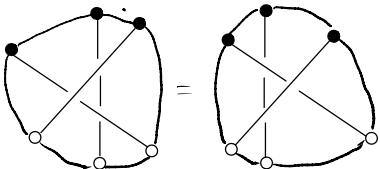
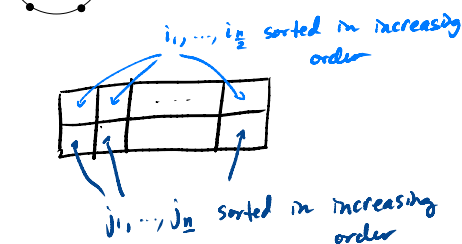


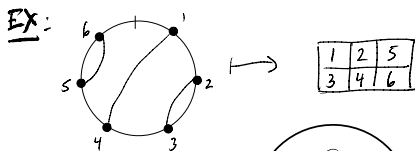
Lecture Series A - Problem Set 4

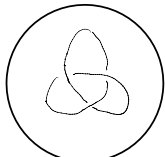
1. Show that  as $U_q(\mathfrak{sl}_2)$ tensor invariants.

2. Let $\{(i_1 < j_1), \dots, (i_n < j_n)\}$ be the arcs in a non-crossing matching of $2n$ vertices. Show that the map sending this to



is a bijection from non-crossing matchings to $2 \times \frac{n}{2}$ SYT.

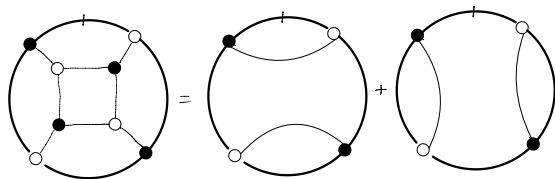


3. Evaluate  as a $U_q(\mathfrak{sl}_2)$ tensor invariant.

(Since there are no boundary vertices this will be in $\mathbb{C}(q^{1/9})$).

Conclude that this knot is not isotopic to the unknot.

4. Show



as SL_3 tensor invariants (recall that tags can be omitted when r is odd).