

# Lecture 6. Exercises

June 1, 2022

## 1 Exercises

1. Show that closures of two  $n$ -strand braids are isotopic in the class of closures of  $n$ -strand braids if and only if these two braids are conjugated.
2. Perform Markov moves and braid isotopy to show the following two torus knots are equivalent:
  - (a)  $T(2, 2n + 1)$  and  $T(2n + 1, 2)$
  - (b)  $T(3, 4), T(4, 3)$ .
  - (c)  $T(p, q), T(q, p)$ .

## 2 Hard exercise

1. Prove that an *positive* braid (i.e., a braid represented by a word containing  $\sigma_1$  but not  $\sigma_1^{-1}$ ) is non-trivial.