

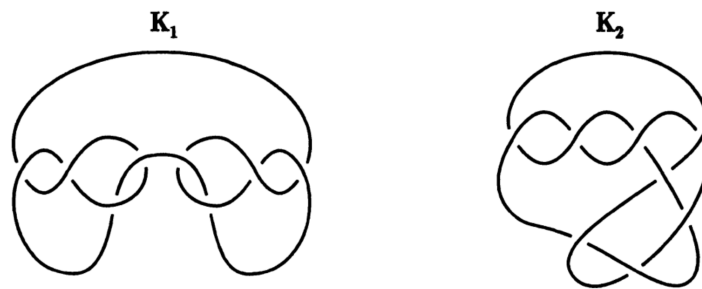
# Algebraic Invariants in Knot Theory

## Practicals 10

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**Exercise 1 (11.2.5)** Consider the knots  $K_1$  and  $K_2$  as in the picture below. Show that they have the same Jones polynomial, however they are not equivalent.



**Exercise 2.** Compute the HOMFLY polynomial of the right-hand trefoil knot.

**Exercise 3.** Compute the HOMFLY polynomial of the 2-component trivial link.

**Exercise 4.** Prove the following properties of the HOMFLY polynomial. For links  $K, K_1, K_2$

- (i)  $P_{K \sqcup O}(u, v) = \frac{1}{z} \left( \frac{1}{v} - v \right) P_K(u, v)$ .
- (ii)  $P_{K_1 \sqcup K_2}(u, v) = \frac{1}{z} \left( \frac{1}{v} - v \right) P_{K_1}(u, v) P_{K_2}(u, v)$ .
- (iii)  $P_{K_1 \# K_2}(u, v) = P_{K_1}(u, v) P_{K_2}(u, v)$ .