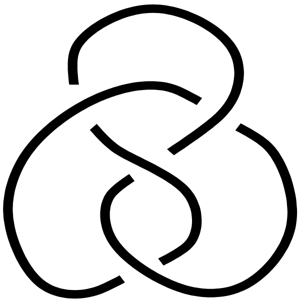
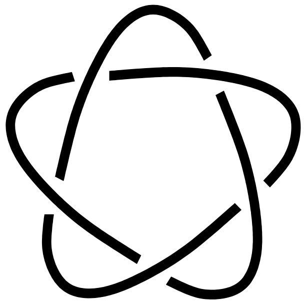
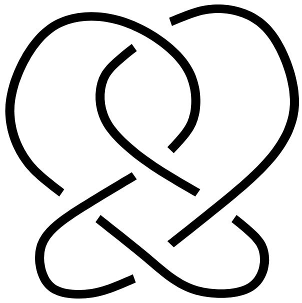
KNOT TABLE



4_1



5_1



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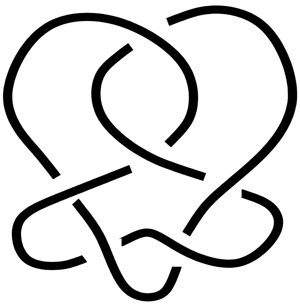
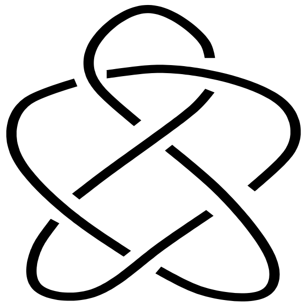
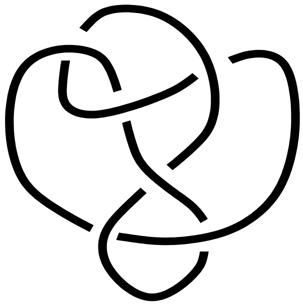


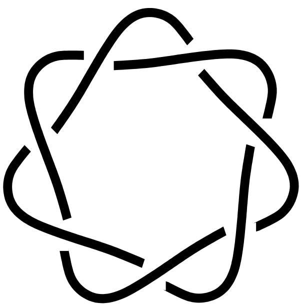
6_1



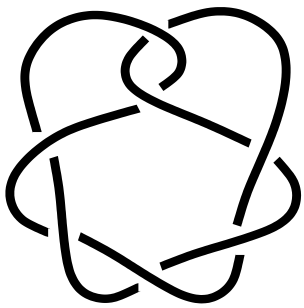
6_2



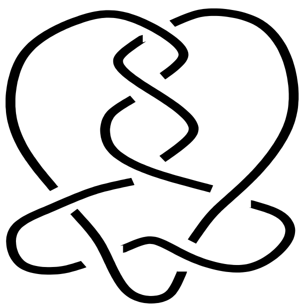
6_3



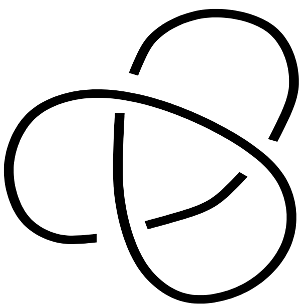
7_1

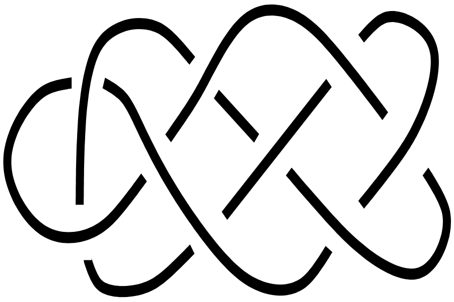


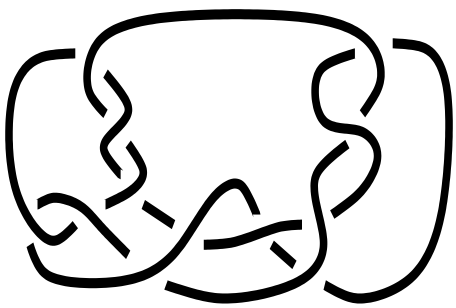
7_2



7_3

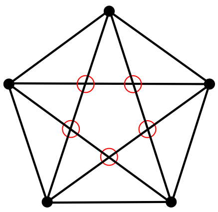




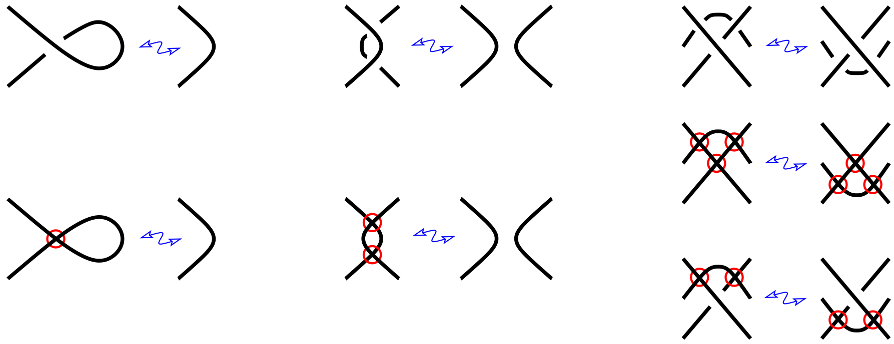


Virtual links [Ka].

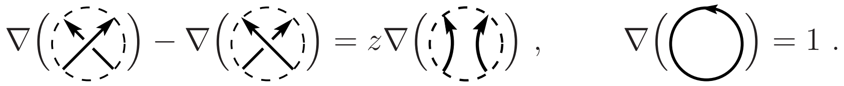
Virtual crossings



Reidemeister moves



Conway polynomial $\nabla(L)$.



$S \subset \{$ crossings $\}$

Smoothings of crossings in S: $L_S :=$

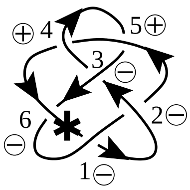
S is *one-component* if L_S is a knot.

S is *ascending*, if at the first approach to each crossing of S we jump down to smooth it.

$$\nabla_{\text{asc}}(K) \quad := \sum_{\substack{S \text{ ascending} \\ \text{one-component}}} \Bigl(\prod_{x \in S} \mathrm{wr}(x)\Bigr)\; z^{|S|}$$

If S is the empty set, then we set the product to be equal to 1 by definition. Therefore the free term of $\nabla_{\text{asc}}(K)$ always equals 1.

Example. knot 6_2



11 one-component subsets with two crossings: $\{1,2\}$, $\{1,4\}$, $\{1,5\}$, $\{1,6\}$, $\{2,4\}$, $\{2,5\}$, $\{2,6\}$, $\{3,4\}$, $\{3,5\}$, $\{4,6\}$, $\{5,6\}$.
3 ascending: $-\{2,4\}$, $+\{2,6\}$, and $-\{4,6\}$.

$$\nabla(6_2) = 1 - z^2 - z^4$$

References

[Ka] L. Kauffman, *Virtual knot theory*, European Journal of Combinatorics, **20** (1999) 663–690.

[SKR] S. Chmutov, M. Khoury, A. Rossi, *Polyak-Viro formulas for coefficients of the Conway polynomial*, Journal of Knot Theory and Its Ramifications, **18**(6) (2009) 773-783. Preprint `arXiv:math.GT/0810.3146`.