Rational tangle Homework

1   Rational Tangles 1

1. Draw the rational tangle $(2, 3, 3)$

    (a) Since there are an odd number of terms, draw 2 right-handed horizontal crossings.

    (b) Draw 3 left-handed vertical crossings.

    (c) Draw 3 right-handed horizontal crossing (note we ended by drawing horizontal crossings)

2. Draw the rational tangle $(2, 4, 1, 3)$

    (a) Since there are an even number of terms, draw 2 left-handed vertical crossings.

    (b) Draw 4 right-handed horizontal crossings

    (c) Draw 1 left-handed vertical crossing.

    (d) Draw 3 right-handed horizontal crossing (note we ended by drawing horizontal crossings).

3. What fraction does $(2, 3, 3)$ correspond to?

4. What fraction does $(2, 4, 1, 3)$ correspond to?

5. What fraction does $(2, -4, 3)$ correspond to?

6. Does the tangle $(1, 1, 2, 1, 2) = (2, -4, 3)$?

7. Find the vector associated to the rational tangle corresponding to the following rational number: $\dfrac{9}{7}$

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2   Homework Part 2: Rational Tangles 2

8. Identify the rational knot corresponding to the numerator closure of the tangle in 7.

9. Suppose a protein binds to a 2 right-handed vertical crossings and adds n right handed horizontal crossings. Identify rational tangle product for $n = 1, 2, 3$. In other word, identify $N(-2, n)$ for $n = 1, 2, 3$.