Math 361: Introduction to Topology
Asst. 6, due M., 3/26

• read sections 2.5-2.7 of Messer/Straffin

This week we will continue adding results to your pet knot portfolio. Remember to add your results to our Google spreadsheet.

Required

1. Draw a 'nice' projection of your pet knot. Calculate the index of each of the 10 regions it makes in the plane. Calculate also the index of each crossing.

2. For your pet knot, label the arcs $a_1, \ldots, a_8$ and label the crossings $x_1, \ldots, x_8$. Write down the arc/crossing matrix for your knot. Use `Maple` or other software to help you compute its Alexander polynomial.

3. 2.5.1: find the Alexander polynomial of the figure 8 knot

4. Find the determinant of your pet knot.

5. Using Livingston's theorem on determinants (cf. problem 2.5.8), find all primes ($p \geq 3$) for which your knot is p-colorable. For each one, find a p-coloring by drawing a sketch. You should use different colors for each of the p 'colors'.