Math 4096 Homework 1

Due Thusday, January 23

1. Show that the three diagrams of Figure 1.5 on page 3 all represent the same knot. Do this by drawing a sequence of pictures that describe the deformations to get from one diagram to another.

2. Page 4, Exercise 1.2.

3. Page 7, Exercise 1.5.

4. Draw a diagram of an unknot with 10 or more crossings. You get bonus points if the diagram is so complicated that I have to use computer assistance to decide if your answer is actually the unknot!

5. Page 10, Exercise 1.8. As part of this problem, be sure to explain why the knot in question is composite.

6. Page 6, Exercise 1.3. This problem involves convincing yourself of something using rope or an extension cord. So there is **no need to hand it in**. But you should still do this problem – it will help a great deal with understanding Reidemeister moves and other forthcoming material.