

**Math 732: Knot Theory**  
**Asst. 8, due W., 3/30**

**Problems to think about, but not submit**

- Cromwell 4.8

**Problems to submit**

You must submit 6 of the following; clearly indicate which ones you want me to grade. You are welcome to submit any others that you want me to provide feedback on.

1. (required) Adams 2.16
2. (required) Adams 2.25
3. (required) (10pts) What is the algebraic structure of  $(\text{Tangles}, +, \cdot)$ ?
  - We said in class that the 0-tangle was an additive identity.
  - Is there a multiplicative identity? A left identity? A right identity?
  - Are there additive inverses? multiplicative inverses?
  - Is addition commutative? associative? Is multiplication?

In each case, provide proofs or counterexamples.

4. (required) Cromwell 4.13
- 5-9. Choose 2 of the following: Adams 2.13, 2.15, 2.18, 2.19, 2.26