1 Definitions to know

• knot – a simple closed polygonal curve in $\mathbb{R}$. (What do all those words mean?)
• knot equivalence – $\Delta$-move
• regular projection
• knot diagram
• torus knot
• Reidemeister moves
• $n$-coloring
• oriented link
• $L$ is the mirror of $L$
• $rL$ is the reverse of the oriented link $L$
• amphichiral $K = \overline{K}$
• reversible $K = rK$
• $u(K)$ unknotting number
• $\mu(L)$ number of components of a link
• $c(L)$ crossing number – How does this differ from $c(D)$, the crossing number for a diagram
• $Lk(L)$ is the linking number (defined for an oriented link)
• $A$ and $A^{-1}$-splittings of a crossing in a diagram
• state of a diagram
• $\langle D \rangle$ Kauffman bracket polynomial for a diagram
• $w(D)$ the writhe of an oriented link diagram
• $V_L(t)$ the Jones polynomial for the oriented link $L$
• $K \# K'$ the connect sum of two oriented knots. Why is the orientation important?
• alternating knot
• reduced alternating diagram
• checkerboard shading of a knot diagram
• span of a Laurent polynomial

2 Computations
• For which primes $p$, is a given knot $p$-colorable
• Compute the linking number of a given oriented link
• Compute the bracket polynomial for a given link diagram
  – using states
  – using Theorem 2.1
• Compute the Jones polynomial of a given oriented link using Theorem 2.7

3 Know the statements of the following results
• Reidemeister’s Theorem – why is it so important?
• $Lk(L)$ is an invariant for oriented links. $|Lk(L)|$ is a link invariant for two component links.
• Theorem 2.1
• Corollary 2.6
• Theorem 2.7
• Theorem 2.8 – Why is this useful?
• Theorem 2.9 (One of the Tait conjectures!) – Why is this useful?
• Theorem 2.12
4 Know how to prove the following

You may assume any of the results from the previous section.

- How do you prove that being $n$-colorable is a knot invariant?
- Lemma 2.5
- $\text{Span}(D)$ is a knot invariant.
- Prove Theorem 2.9 using Theorem 2.12