Math 496, Fall 2013: Homework 1

Due Friday September 20

Problem 1: (a) Give an example of a 4-component link such that every two of its components have linking number zero.

(b) Show that for every integer n there is a 3-component link such that every two of its components have linking number n.

Problem 2: Determine whether the knot 6_2 of the knot table is *tri-colorable.*

Problem 3: For a knot K let $c(K)$ denote the crossing number of the knot (that is the minimum number of crossings over all the knot diagrams of K). Show that for any knots K, K' we have

$$c(K\#K') \leq c(K) + c(K'),$$

where $K\#K'$ denotes the *connect sum* of K and K'.

Problem 4: Do exercise 1.26 on page 25 of the book.

Problem 5: Do exercise 1.11 on page 16 of the book.

Problem 6: Do exercise 2.5 on page 37 of the book.