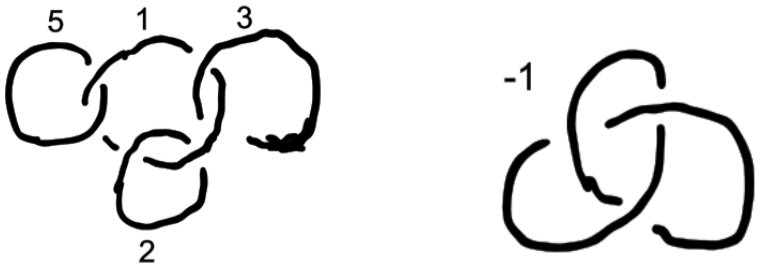
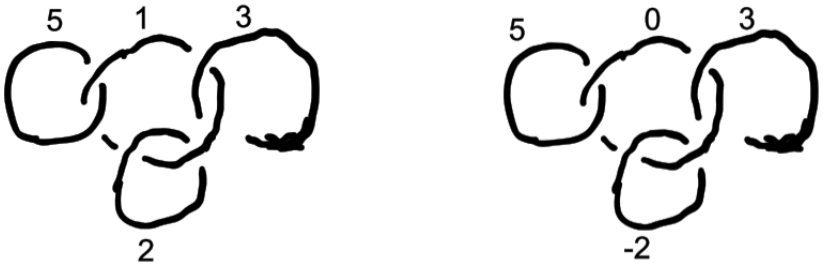
Exercise Set #2

Exercise 1: The following exercises relates two surgery descriptions of the Poincaré homology sphere.

a Show that the two framed links are equivalent.



b Show that these two framed links are also equivalent.



Exercise 2: Let K and K' be unlinked knots in S^3 with framings n and n'. Show that the framed link formed by linking K and K' with a 0-framed unknot is equivalent to a $K\#K'$ with framing $n+n'$.

Exercise 3: Let M be a 4-manifold obatined by attaching l 2-handles to a 0-handle along an l component framed link.

a What is ∂M?

b Compute the homology $H_*(M)$.

Exercise 4: What effects do the Kirby moves K1 and K2 have on the linking matrix?

Exercise 5: Find a handle decomposition of $S^1 \times S^1$. What about $S^1 \times S^1 \times S^1$? What about $S^1 \times S^1 \times S^1 \times S^1$?