Dehn Surgery and 3-Manifolds Exercise Set #4

Exercise 1: Let \( \langle \mu', \lambda' \rangle \) be a basis of the boundary of the solid torus glued in via surgery for \( S^3_{m/l}(T_{p,q}) \). Find the coefficient of \( \lambda' \) for the curve that is mapped to \( F \) under the surgery instruction.

Exercise 2: Discuss the details of Moser’s theorem.

Exercise 3: Let \( K \) be the figure-8 knot. Show that \( S^3_4(K) \) contains a Klein bottle and conclude that the manifold is not hyperbolic.

Exercise 4: Why is \( S^3_0(K) \) irreducible for a non-trivial knot \( K \)?