Exercise sheet 2

Knots and Braids, MTH436

All the numbered exercises are from Knots Knotes by Justin Roberts

1. How does a the jones polynomial of a knot compare with that of its mirror image? How about 3-colouring?
2. Prove that if a knot bounds a (triangulable) disk, then it can be deformed to the boundary of a single triangle by a sequence of Δ-moves.
3. Compute the minimal genus of the trefoil.
4. Prove that the minimal genus of a knot cannot exceed half the crossing number.
5. 7.1.12
6. Show that there are infinitely many distinct knots in three different ways:
   (a) Use the genus
   (b) Use the 3-colouring invariant
   (c) Use the Jones polynomial
7. 7.2.9