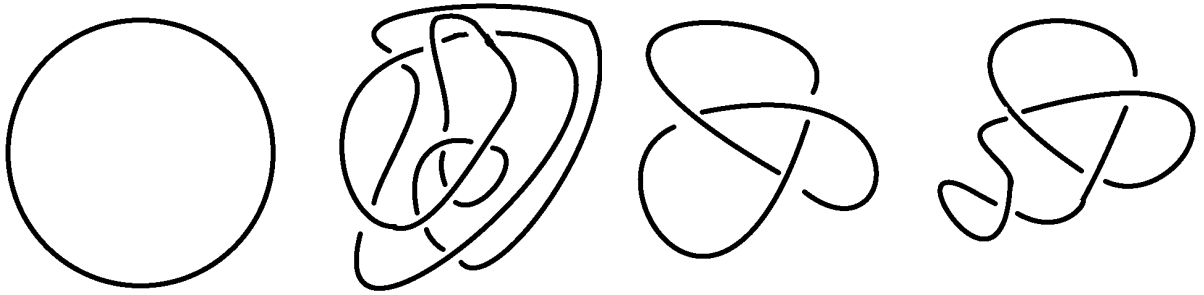


# Knot Introduction

While working in a group make sure you:

- Expect to make mistakes but be sure to reflect/learn from them!
- Are civil and are aware of your impact on others.
- Assume and engage with the strongest argument while assuming best intent.



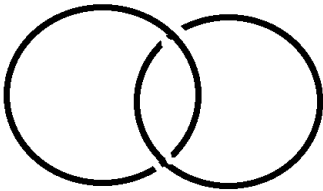
1. Determine if any of the above knots/links are equivalent. If they are, provide some steps or justification to back your claim.

2. For each of the knots above find the crossing number

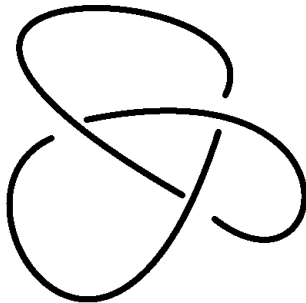
3. Revisit the definition of *crossing number* that was introduced in class-update the definition so that it is well defined.

**Definition 9.3.** Given a knot  $K$ , define its mirror image, denoted  $K^*$ , is the original knot with all the crossings reversed. That is, all under crossings become over crossings and vice versa.

4. Consider the Hopf link shown below. Verify that the image seen in a mirror held next to (not intersecting!) the Hopf link is consistent with the definition given above. Consider using a smart device that is turned off as a mirror.



5. Consider the trefoil knot shown below. Verify that the image seen in a mirror held next to the trefoil is consistent with the definition given above.



6. Is the Hopf link equivalent to its mirror image? Is the Trefoil equivalent to its mirror image? If equivalent provide some justification. If not, what kind of justification is needed to verify your results?