Week 1 0-1. The unknot and Reidemeister moves 0. Find: a) A link diagram for the unknot with 100 crossings. b) A link diagram with n components and 2(n-1) crossings. (The link must be connected, e.g. (G5 doesn't count) c) A link with three components such that removing any one component yields two separate unknows: OO 1. Simplify the following diagrams until obtaining the unknot, indicating each Reidemeister more (22) (2)°) ( 2. In the following link diagrams, perform Reidemeister moves until moving the orange strand in bold to the dashed blue strand.  $\left(\begin{array}{c} \\ \end{array}\right)$ 3. The move you performed in 2 is called a macro-move. A macro-move is a move of the form simplify the knot from the poll into a simpler knot. 4. Classify: a) All links with exactly two components and at most 4 crossings b) All knots with exactly 3 crossings (don't count crossings than can be undone, e.g. 0000 doesn't count) c) All Knots with exactly 4 (rossings (don't count crossings than can be undone, e.g.: DOOOO doesn't count) Hint: use macro-mones to show the figure-eight knot and its mirnor image are topologically equivalent.

c) Can you that the link you obtained in A.C) is not topologically equivalent to OO d) Can you show that the figure eight kind isn't security the unknot? e) Can you show that the figure eight kind isn't security the unknot?	<ul> <li>b) Can you show that the knots you obtained in 4.6) are not topologically equivalent to the unknot?</li> <li>c) Can you show that the link you obtained in A.C) is not topologically equivalent to OOC</li> <li>d) Can you distinguish the trefoil and its mirror image?</li> <li>e) Can you show that the figure-eight knot isn't secretly the unknot?</li> </ul>	) (	Much	hard	er)	· ·			ł	Н.	 D	•	•	.1 +	· · ·		•			0			· ·		.7	•	•	•	•
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