Universal Algebra 1 - Homework 5

Deadline 4.1.2022, 17:20

1. Let $\bar{\wedge}$ be the binary operation on $2 = \{0, 1\}$ defined by

$\bar{\wedge}$	0	1
0	1	0
1	0	0

   Show that $\{\neg, \wedge, \vee\} \subseteq \mathrm{Clo}((2, \bar{\wedge}))$.

2. Let $\mathscr{C} = \mathrm{Clo}(\mathbf{A})$, where $\mathbf{A} = (\{1, 2, 3, 4\}, *)$ with

$*$	1	2	3	4
1	2	3	2	1
2	1	4	3	4
3	2	1	2	1
4	3	4	3	2

   Prove that there is no 5-ary operation $f \in \mathscr{C}$ satisfying $f(2, 1, 3, 4, 3) = 1$ and $f(2, 1, 1, 4, 3) = 2$. (Hint: invariant relations)