

NMAG 455 Universal Algebra 2, spring semester 2017–2018

Homework 2

Deadline 18 Apr 2018, 9:00

2.1. (10 points) Find a convergent rewriting system equivalent to the identity $(x \cdot y) \cdot (y \cdot z) \approx y$ (Hint: Knuth-Bendix will produce 2 additional rules.)

2.2 (10 points) Prove that the following rewriting system is finitely terminating:

$$\begin{aligned} s(x) + (y + z) &\approx x + (s(s(y)) + z) \\ s(x) + (y + (z + w)) &\approx x + (z + (y + w)) \end{aligned}$$

2.3 (10 points) Prove that the variety of distributive lattices has definable principal congruences by showing that (c, d) is in the congruence generated by (a, b) iff $c \wedge (a \wedge b) = d \wedge (a \wedge b)$ and $c \vee (a \vee b) = d \vee (a \vee b)$.