

Assignment #9

Assignment due in lecture on Friday, March 14.

Reading: Review Burris and Sankappanavar, pp. 19-20 on algebraic lattices¹.

To do but not hand in:

DD-1;

B&S, p. 20 Problem 8.

To hand in:

AA-10 (see below);

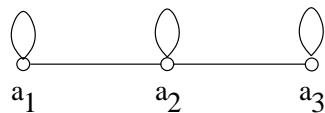
DD-4, DD-5;

B&S p. 20 Problem 9, just the last assertion about an algebraic lattice.

For AA-10: Explanation of Shallon's graph algebra:

For a graph G , we can make an algebra $\mathcal{A}_G = \langle G \cup \{0\}; \cdot \rangle$, where 0 is a new element not in G . The "multiplication" operation \cdot is defined for any x, y by setting $xy = x$ if x and y are in G and are connected by an edge, and $xy = 0$ otherwise. In particular $x0 = 0x = 0$ for all x , and $xx = x$ if there is a loop at x .

Consider this specific graph G_3 with loops:



Thus $a_1a_1 = a_1$, $a_1a_2 = a_1$, and $a_2a_1 = a_2$, but $a_1a_3 = 0$. \mathcal{A}_{G_3} is Shallon's algebra², referred to as \mathcal{A}_3 in Problem AA-10.

¹This was originally part of reading for day 2-F. Its relevance should be clearer now.

²This example, which is "nonfinitely based", is from C. Shallon's thesis at UCLA.