

COMP 455  
Models of Languages and Computation  
Spring 2021  
Homework 1  
Due Wednesday, August 25, 2021

1. True or false:
  - a.  $\{c, b\} \in \{\{a, b\}, c, \{b, c\}\}$
  - b.  $\{a, b\} \subseteq \{\{a, b\}, \{b, c\}\}$
  - c.  $\{\{a, b\}, \{b, a, c\}\} = \{\{c, c, a, b\}, \{b, a\}, \{a, a, b\}\}$
2. Compute the result of these operations:  
 $(\{a, b\} \cup \{a, d\}) \cap \{a, c, b\}$
3. Compute the result of this composition of two relations:  
 $\{(a, b), (b, c), (a, f)\} \circ \{(b, f), (c, a), (b, c), (f, d)\}$

For this homework you may work in groups of up to four people if you choose to, and groups are encouraged to turn in only one paper with everyone's names in the group on it. This will make the work of the grader easier. For this you **MUST** use Gradescope's group facility which will assign everyone in the group the same grade. Also, the name of everyone in the group must be on the paper or else those missing will not get credit.

Those who want to be part of a group and can't find others may send email to the TA (today or later) and form groups, if you desire to.