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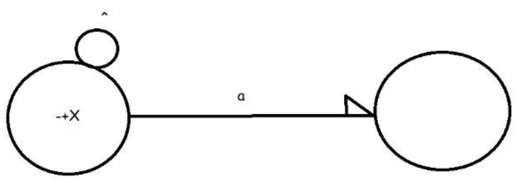
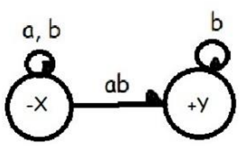
CSC 310 – 001
4/18/2024
Homework #2
NOTE: I worked with Nick Gilley on this homework, so if our answers are similar then that is why.

1.) True.
2.) 2 paths
3.) 3 paths – 2 work and 1 does not
4.) False, it will accept words ending in "aa", but it will also accept words only ending in just "a"
5.)



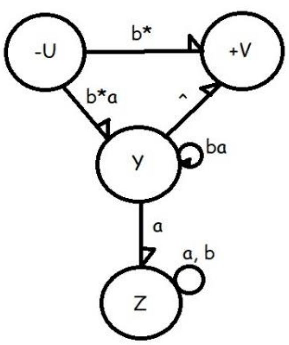
6.)

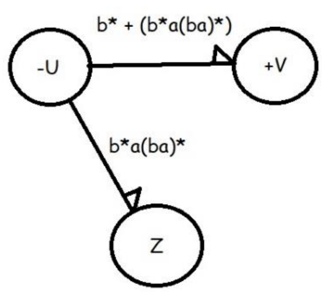


7.) False, it is the other way around.
8.) True.
9.) False.
10.)

U->V = ^b*^ = b*
U->Y = ^b*a = b*a
Y->Y = ba

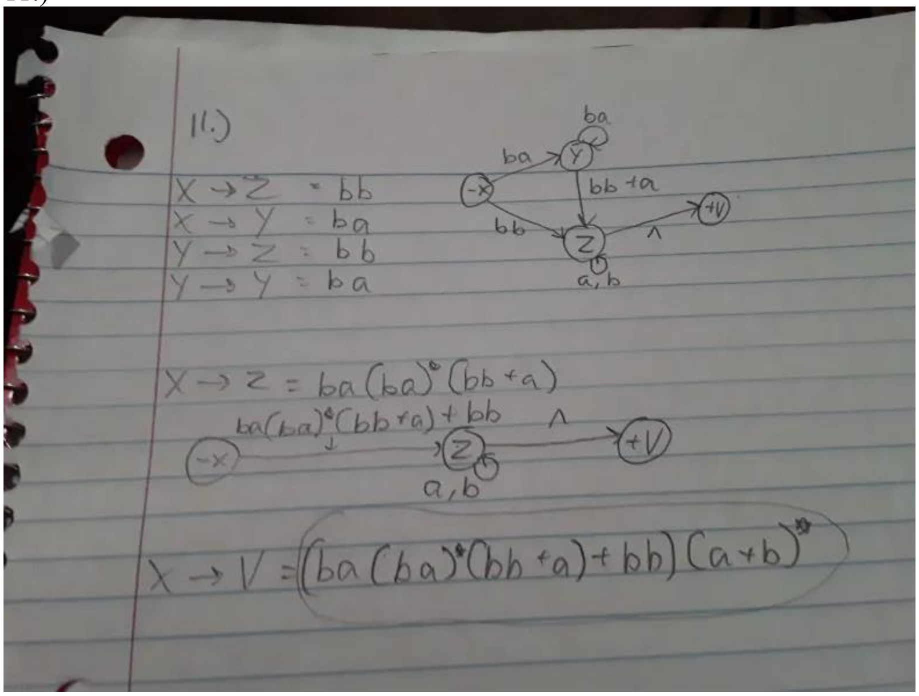
U->V = b*a(ba)*^ = b*a(ba)*
U->Z = b*a(ba)*a



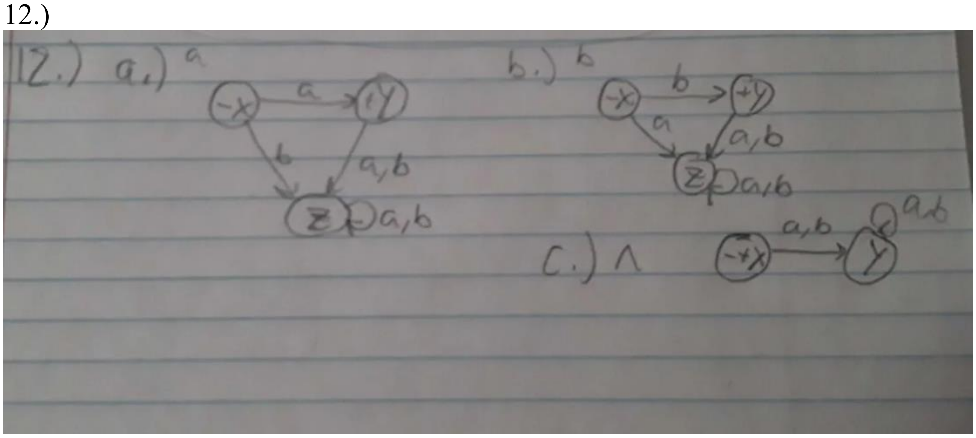


Answer: b* + (b*a(ba)*)

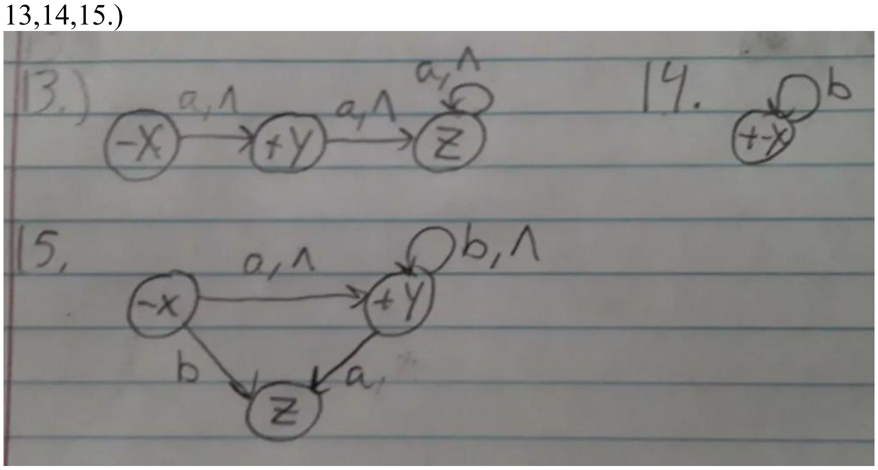
11.)



12.)

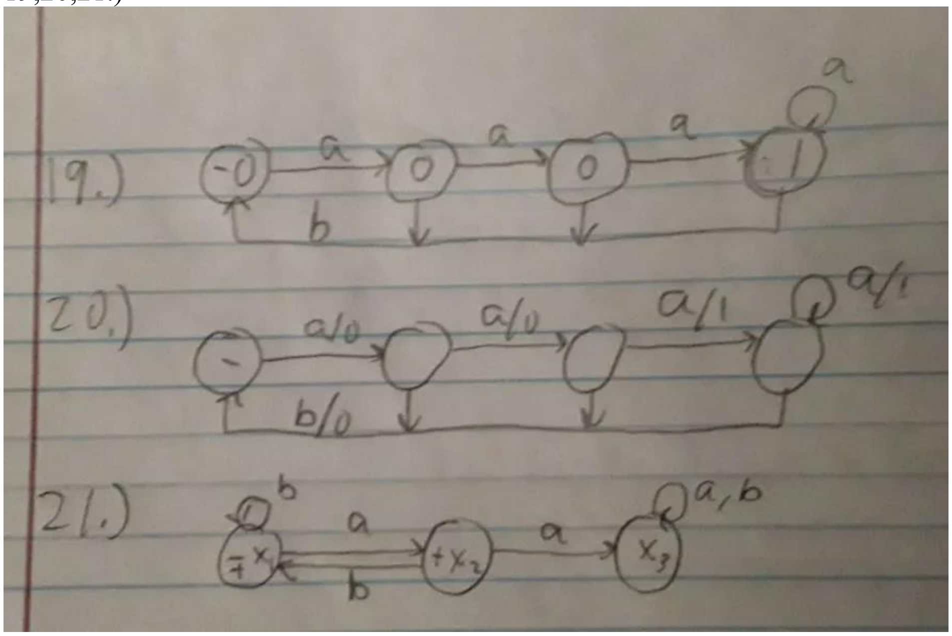


13,14,15.)



16.) False.
17.) False, they can have 0 or more.
18.) True.

19,20,21.)



22.) From what I can tell, there is no intersection for these expressions. To make a finite automata with intersection you HAVE to have the new automata end in an accepting state that accepts both automata's ending states. The first automata HAS to end in at least 1 a, while the second HAS to end in at least 1 b. I don't think there is an accepting state for both, and according to slide 17 of lecture 8 that IS a possibility. If you want an automata for this, envision a single node that is the starting state but has no accepting state, and it has 2 arcs going back to itself (one for a and the other for b). I think that's the closest I can get… If there is an actual correct answer for this, PLEASE let me know, because I have absolutely no clue.