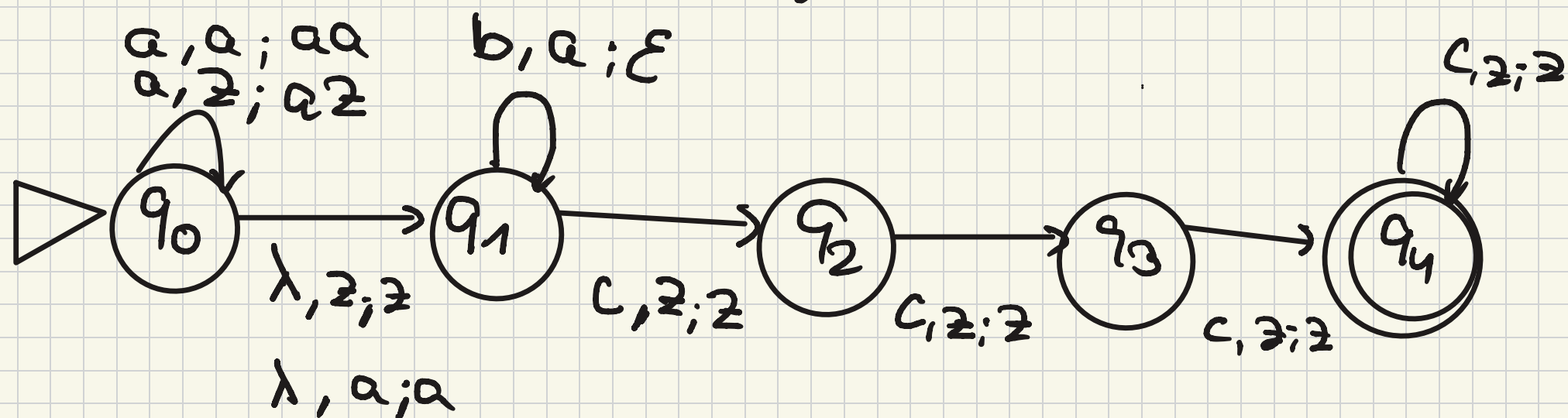


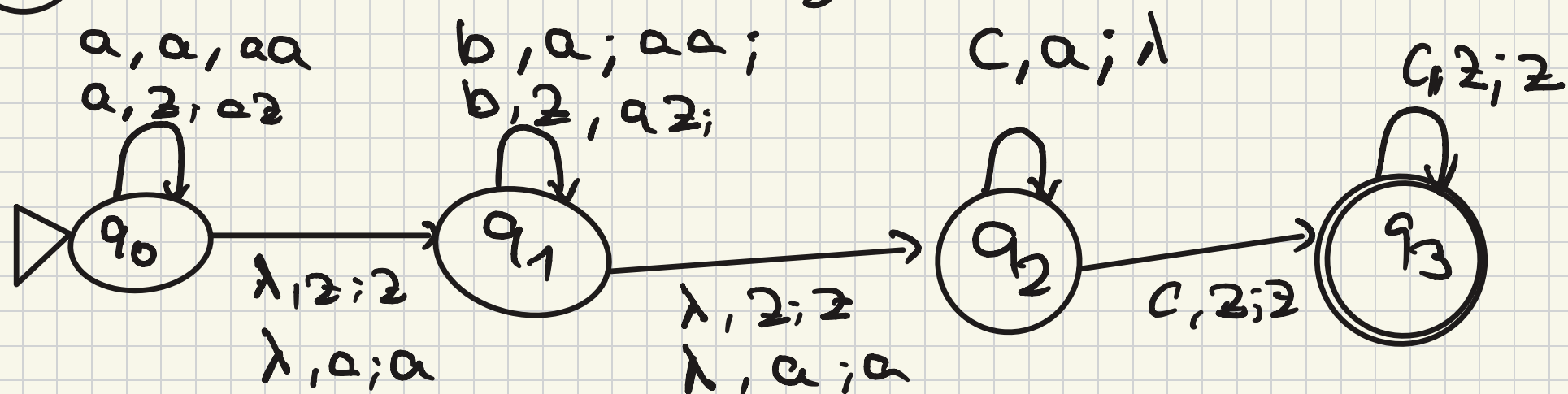


①  $a, x; y$

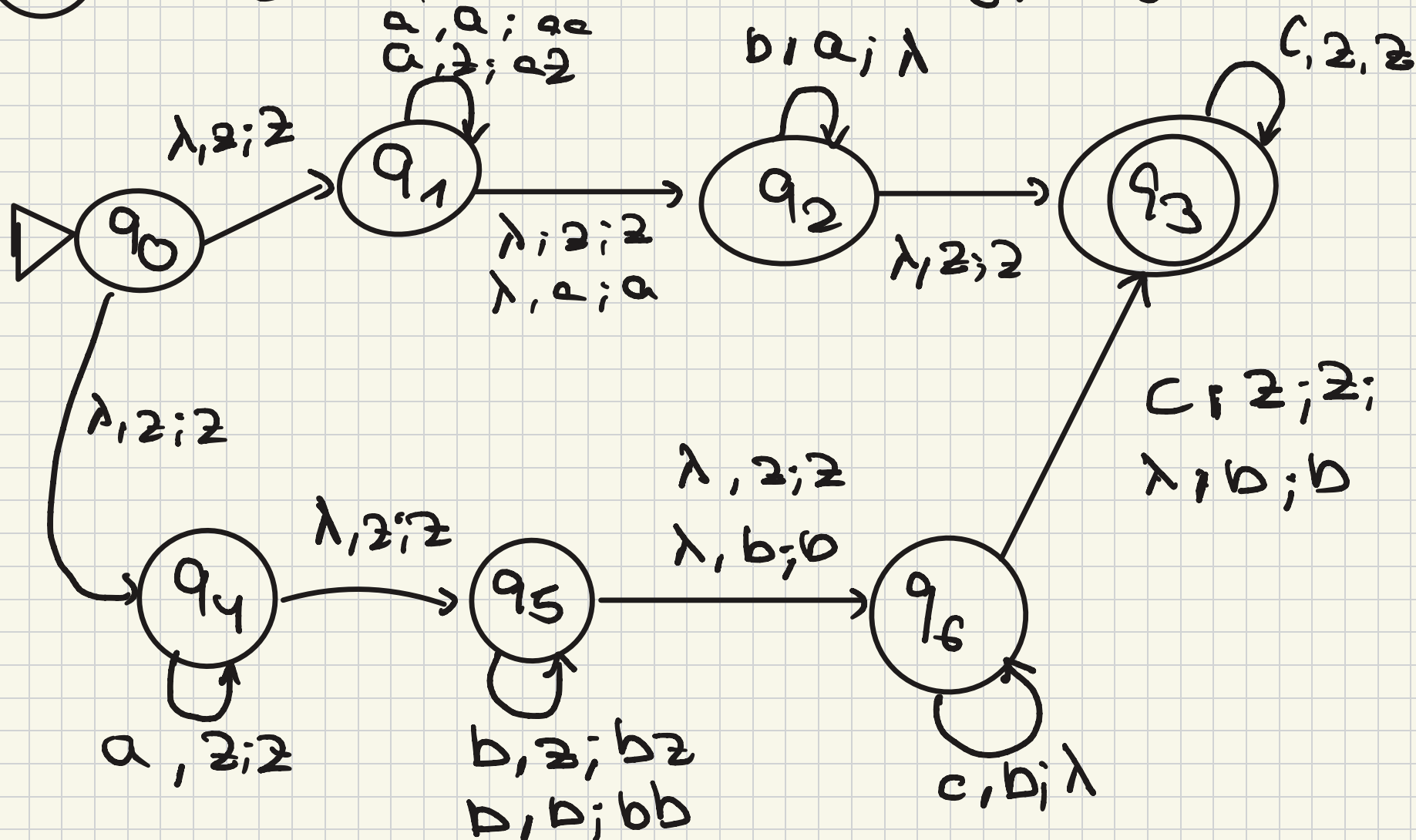
$$L = \{a^i b^j c^k \mid k \geq 3\}$$



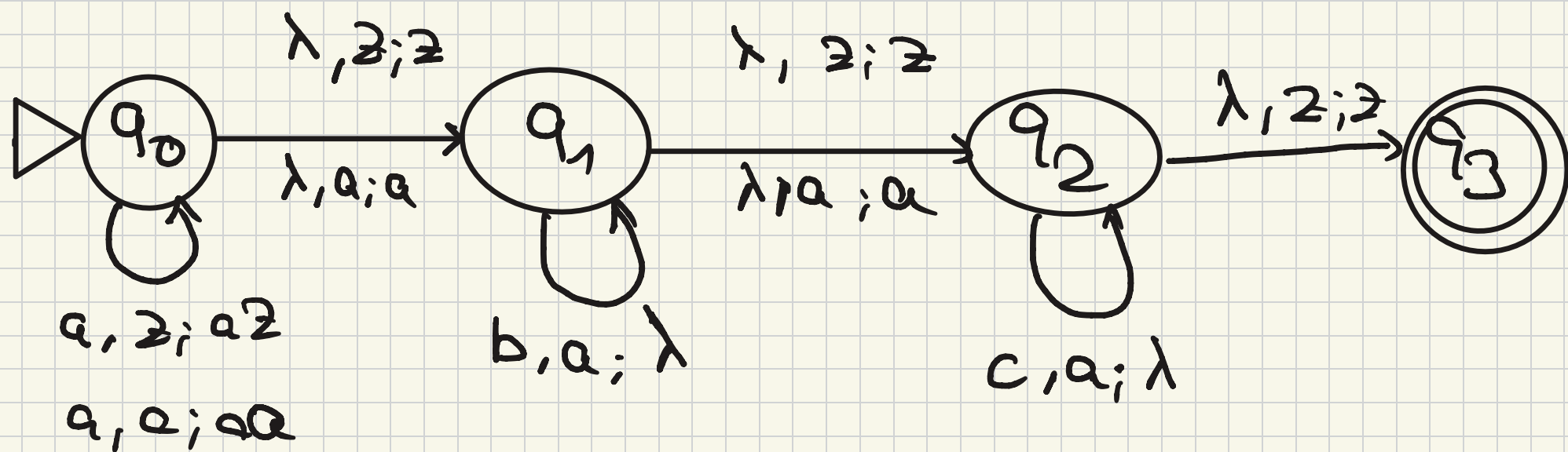
②  $L = \{a^i b^j c^k \mid k > i + j\}$



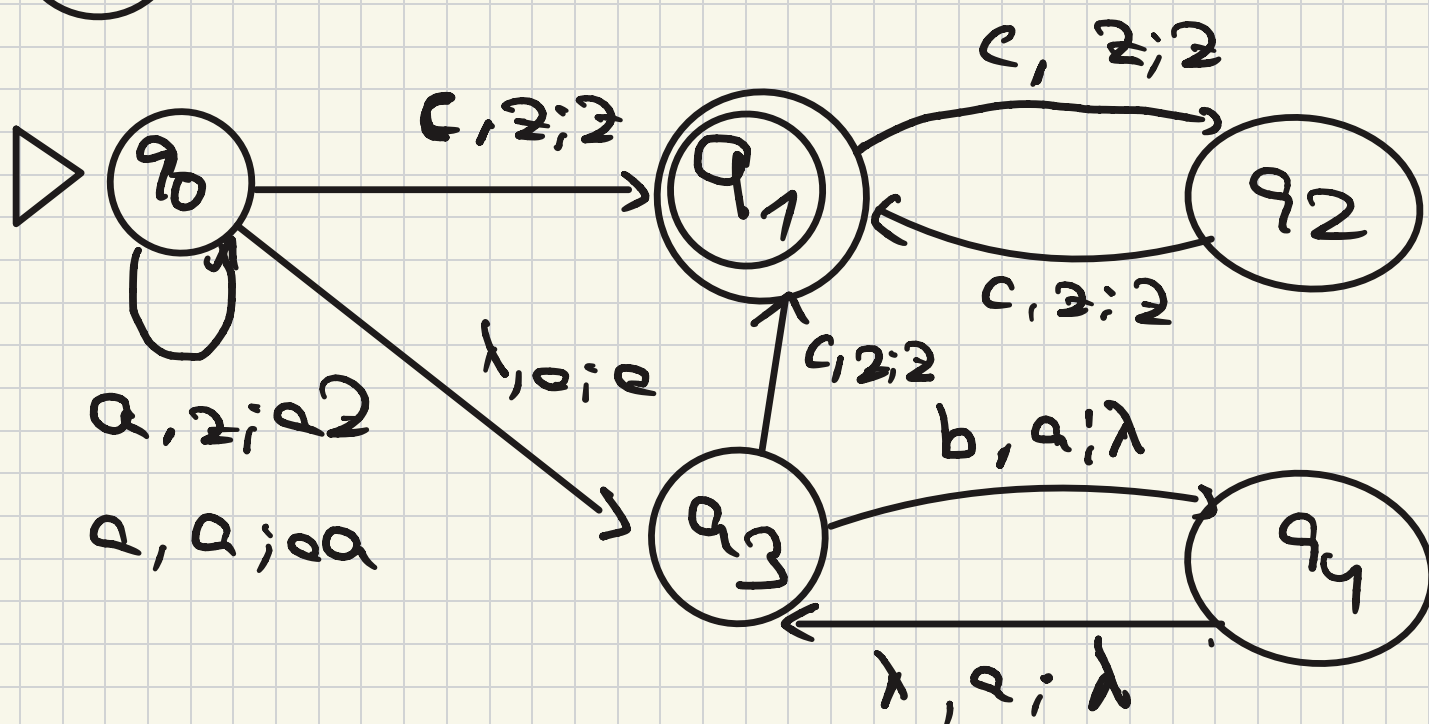
③  $L = \{a^i b^j c^k \mid i = j \text{ or } j \neq k\}$



4)  $L = \{ a^i b^j c^k \mid k = i - j, i, j, k \geq 0 \}$

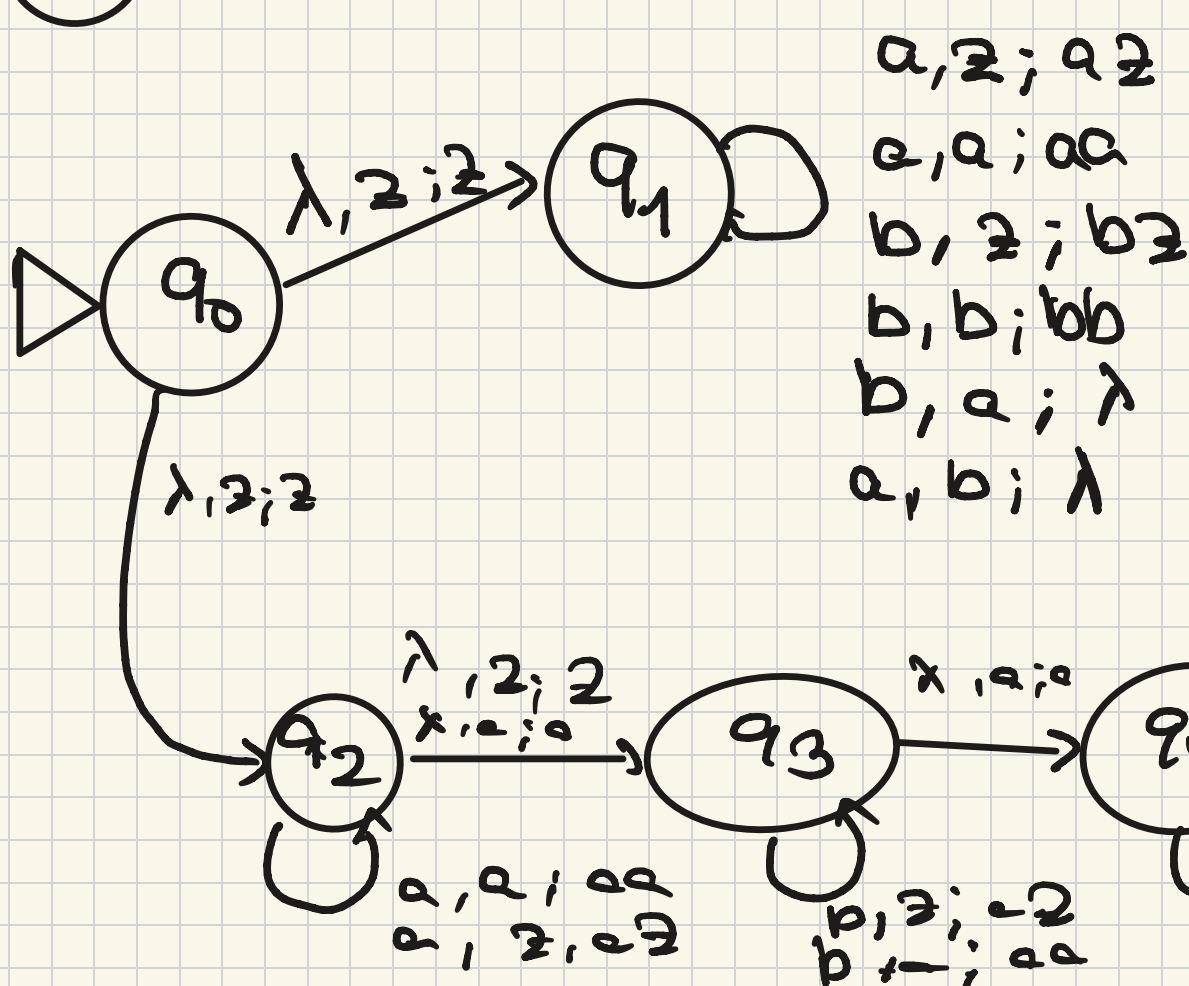


5)  $L = \{ a^i b^j c^k \mid N(a) = 2N(b) \wedge N(c) \text{ is even} \}$



6) a)  $N(c) = N(a) - N(b)$

b)  $a^i b^j c^k \mid k - i \leq j$

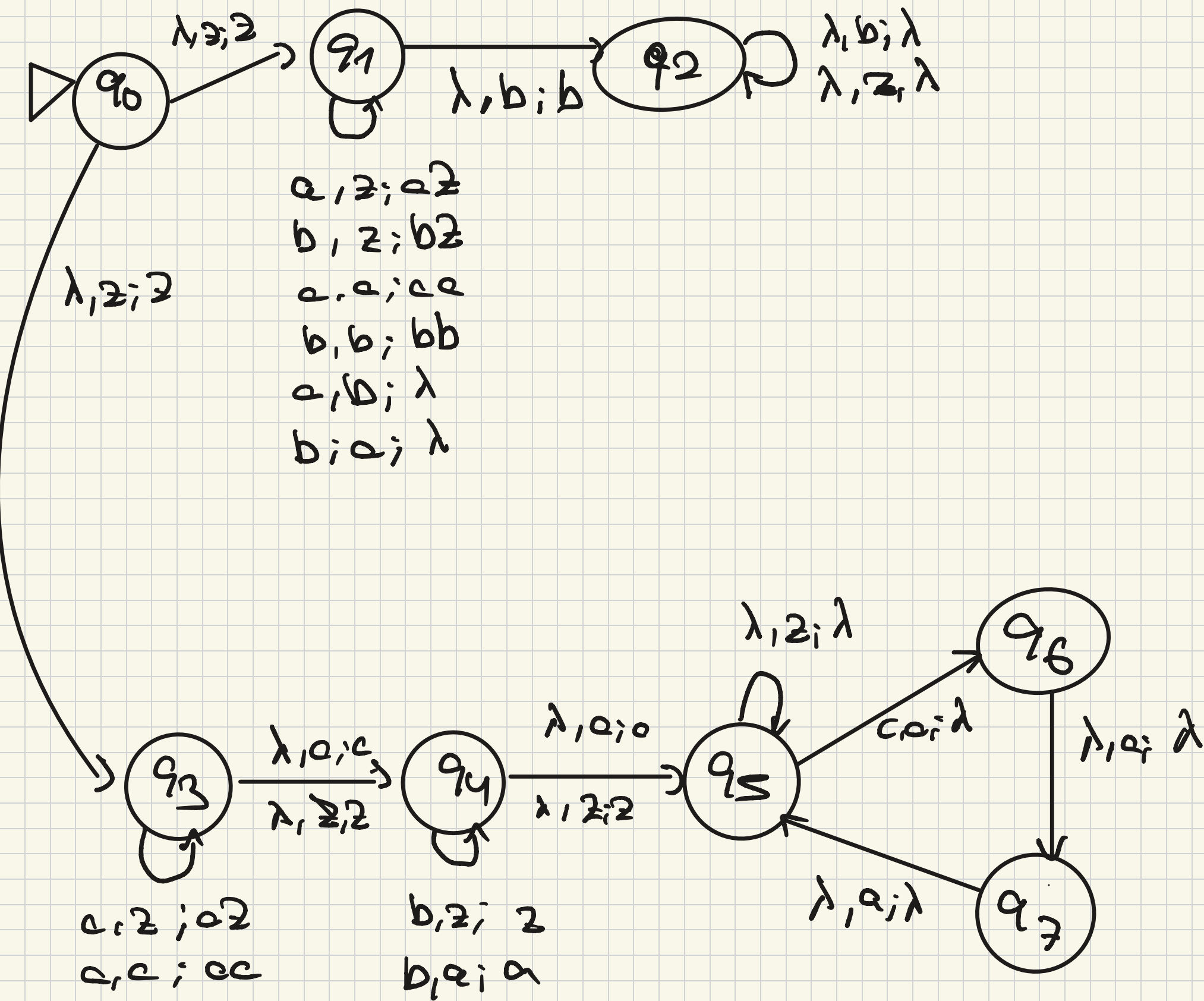


$c, a; \lambda$   
 $c, b; bb$   
 $c, z; bz$   
 $\lambda, z; \lambda$

$N(a) = N(b)$   
 $+ N(c)$

7. c)  $N(a) < N(b)$

d)  $a^i b^j c^k \mid \exists k \geq i$



8) e)  $a^i b^j c^k d^m \mid i+k=j+m$  f)  $a^i b^j c^k d^m \mid i+m=j+k$

