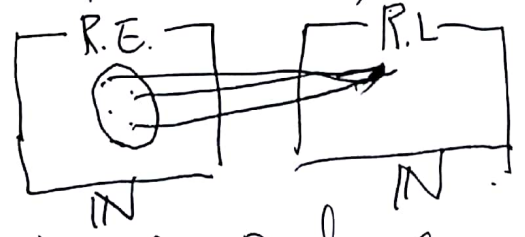


Fact 3.5  $E, E^2, E^3, \dots$   $L((a|b)^*) = L(((a|\epsilon)^*(b|\epsilon)^*)^*)$



Ambiguity of Regular Expressions

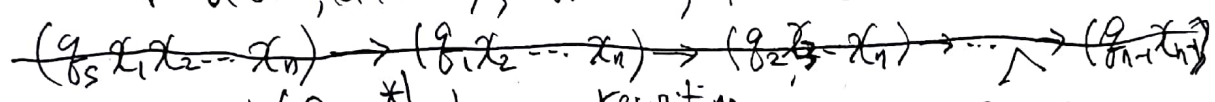
unambiguous R.E.  $(0|1)^*(000|111)(0|1)^*$

unambiguous R.E. dfa ?

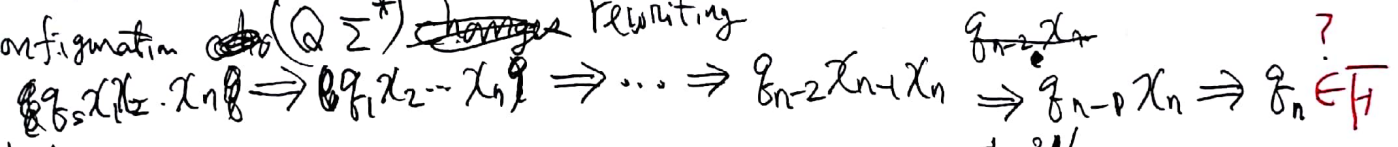
3.2 finite automata

$M = (V, P)$  is a rewriting system where

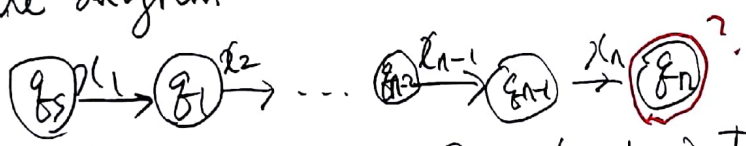
$V = Q \cup \Sigma, Q \cap \Sigma = \emptyset, q_s \in Q, F \subseteq Q$



Configuration  $(Q \Sigma^*)$  changes rewriting



state diagram



re  $\xleftrightarrow{\text{Thm 3.16}}$  fa  $\xleftarrow{\text{Thm 3.17}}$

3.3 Regular grammar Parse (syntax) tree

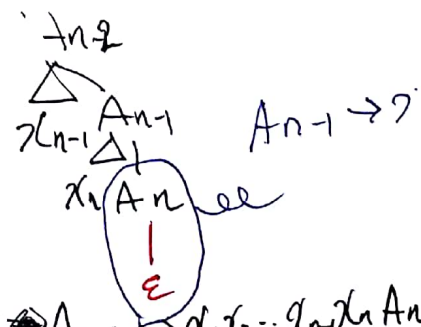
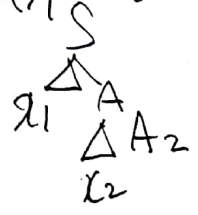
$S \rightarrow x_1 A_1$

$A_1 \rightarrow x_2 A_2$

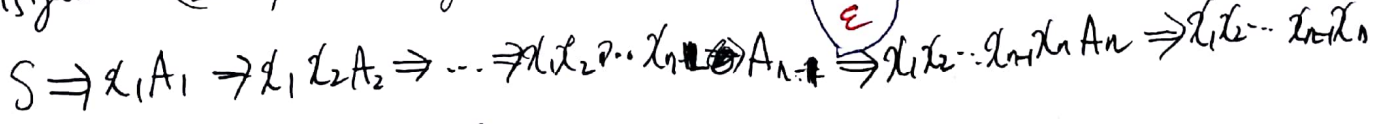
$A_{n-2} \rightarrow x_{n-1} A_{n-1}$

$A_{n-1} \rightarrow x_n A_n$

$A_n \rightarrow \epsilon$



Configuration  $(\Sigma^* A)$  rewriting.



fa  $\leftrightarrow$  rg is trivial