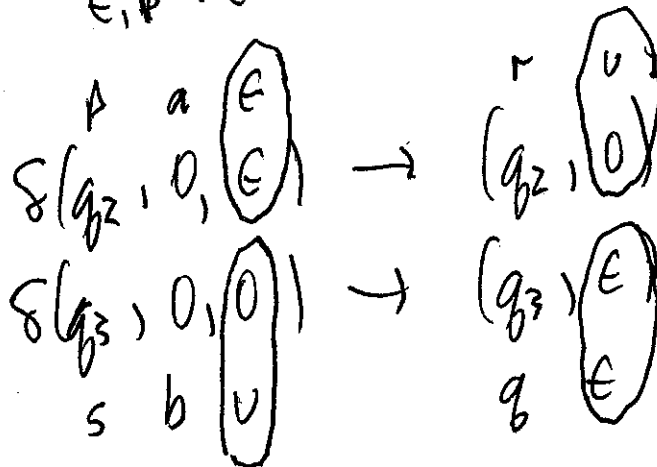
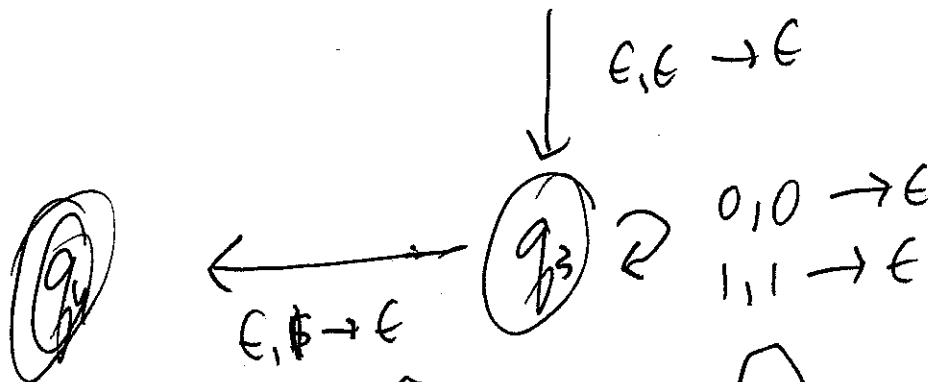
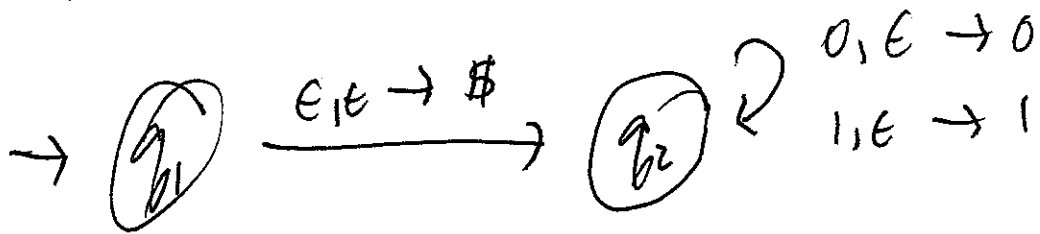


FIGURE 2.19



$A_{23} \rightarrow 0 A_{23} 0$

Start variable: A_{14}

from 2/22 \curvearrowright

$$A = \{ a^n b^n c^n \mid n \geq 0 \}$$

Show A is not context-free

Consider string $a^p b^p c^p$

Case 1: both v and y contain only a 's

v contains k a 's

y contains m a 's

Consider ~~uv^2xy^2z~~ $= a^{p+k+m} b^p c^p$

Since $k+m \geq 1$, $uv^2xy^2z \notin A$

better case 1: v contains ~~at least one~~ only 1 symbol

y contains only 1 symbol

better case 2: ~~at least one of~~ v or y contains 2 distinct symbols

consider ~~uv^2xy^2z~~

$uv^2xy^2z \notin A$ because ...

$$B = \{ wAw \mid w \in \{0,1\}^k \}$$

$$0^p 0^p 0^p$$

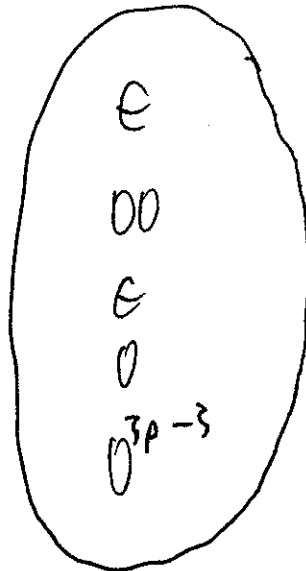
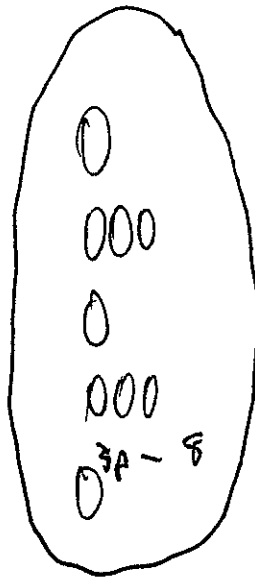
$$u = 0^{p-1}$$

$$v = 00$$

$$x = 0^{p-2}$$

$$y = 00$$

$$z = 0^{p-1}$$



these two strings

can be pumped,

showing that $0^p 0^p 0^p$

is not a good choice