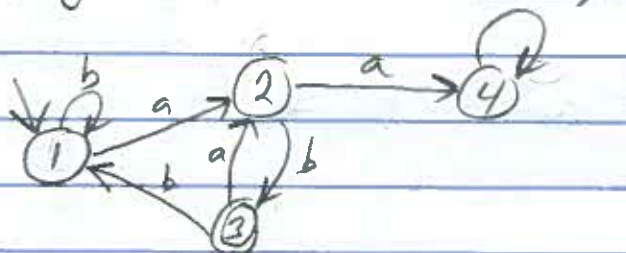


HW 2 Soln

2.13 page 80



$$S = \{ \lambda, a, ab, aa \}$$

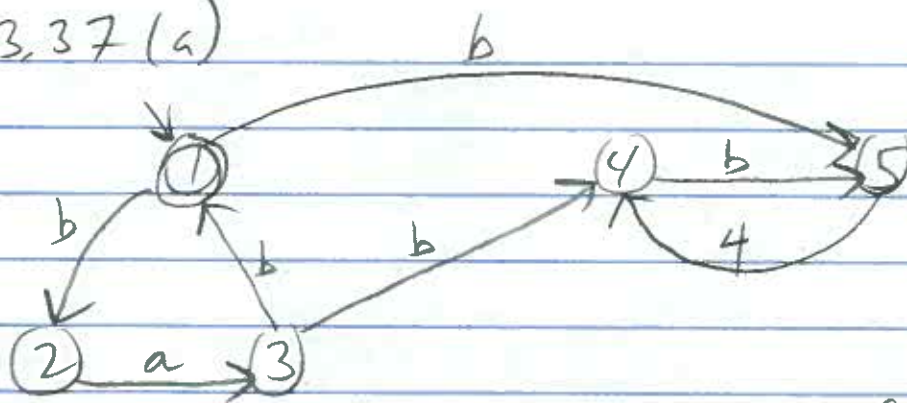
6 pairs to test: ($v \in L$ $X = \text{NOT IN L}$)

	x	y	$z \in L?$		x	y	$z \in L?$
	λ	b	X		a	λ	X
	a	b	✓		ab	λ	✓
	λ	λ	X		a	b	✓
	ab	λ	✓		aa	b	X
	λ	ab	✓		ab	λ	✓
	aa	ab	X		aa	λ	X

By theorem 2.21, at least 4 states are needed

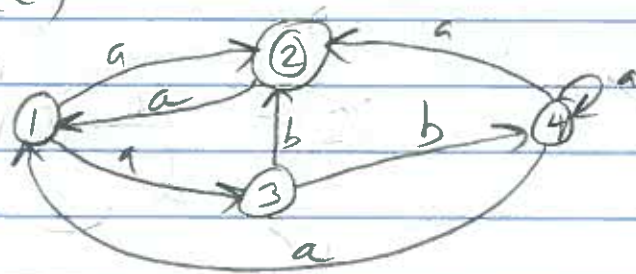
2.17 a $x = bpa$ and $y = bbba$
are indistinguishable; any $z \in \Sigma^*$
puts $xz \notin L$ and $yz \notin L$

3.37 (a)



State s	COAST	COBOLD	COAST	COBOLD	COAST
	λ -close(s)	a	λ -close	b	λ -close
1	1, 4	\emptyset	\emptyset	2, 5	2, 5
2	2	3	3	\emptyset	\emptyset
3	3	\emptyset	\emptyset	1	1, 4
4	4	\emptyset	\emptyset	5	5
5	5	4	4	\emptyset	\emptyset

3.37 (c)



State s	λ -close	a	λ -close	b	λ -close
1	1	2, 3	2, 3	\emptyset	\emptyset
2	2	1	1	\emptyset	\emptyset
3	3	\emptyset	\emptyset	4	2, 4
4	2, 4	1, 4	1, 2, 4	\emptyset	\emptyset