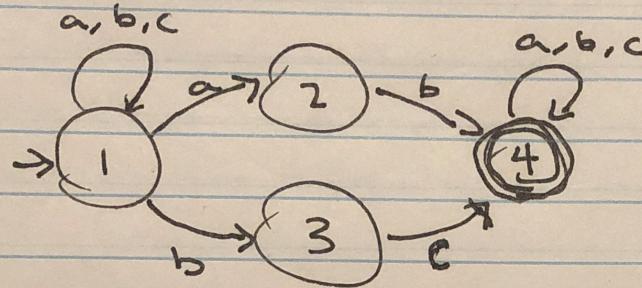


Problem Set 1

$$1) ((a \mid b \mid c)^* (ab) (a \mid b \mid c)^*) \mid ((a \mid b \mid c)^* (bc) (a \mid b \mid c)^*)$$

2)



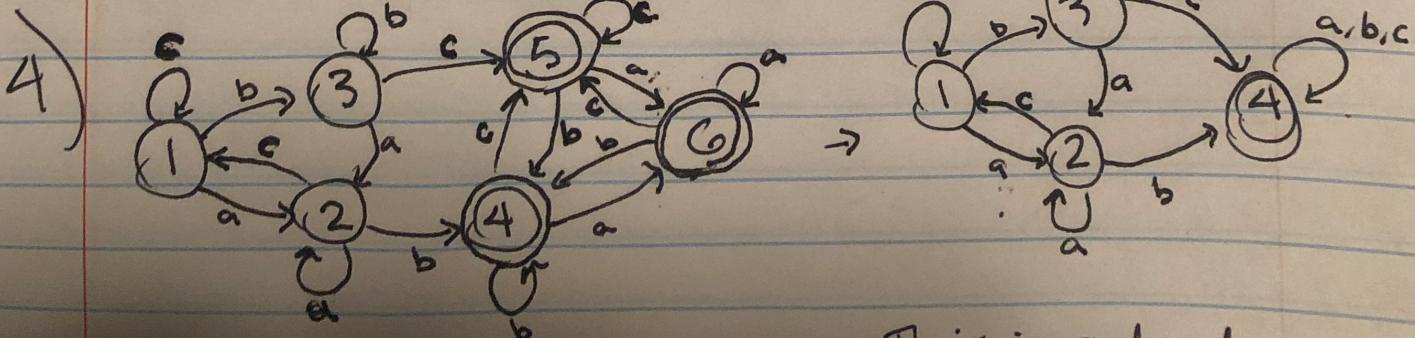
3)

State	a	b	c
$\{1\}$	$\{1, 2\}$	$\{1, 3\}$	$\{1\}$
$\{1, 2\}$	\emptyset	$\{1, 2\}$	$\{1\}$
$\{1, 3\}$	$\{1, 2\}$	$\{1, 2, 3\}$	$\{1, 3\}$
$\{1, 2, 3\}$	$\{1, 4\}$	$\{1\}$	$\{1, 2, 3\}$
$\{1, 4\}$	$\{1, 2, 3\}$	$\{1\}$	$\{1, 4\}$

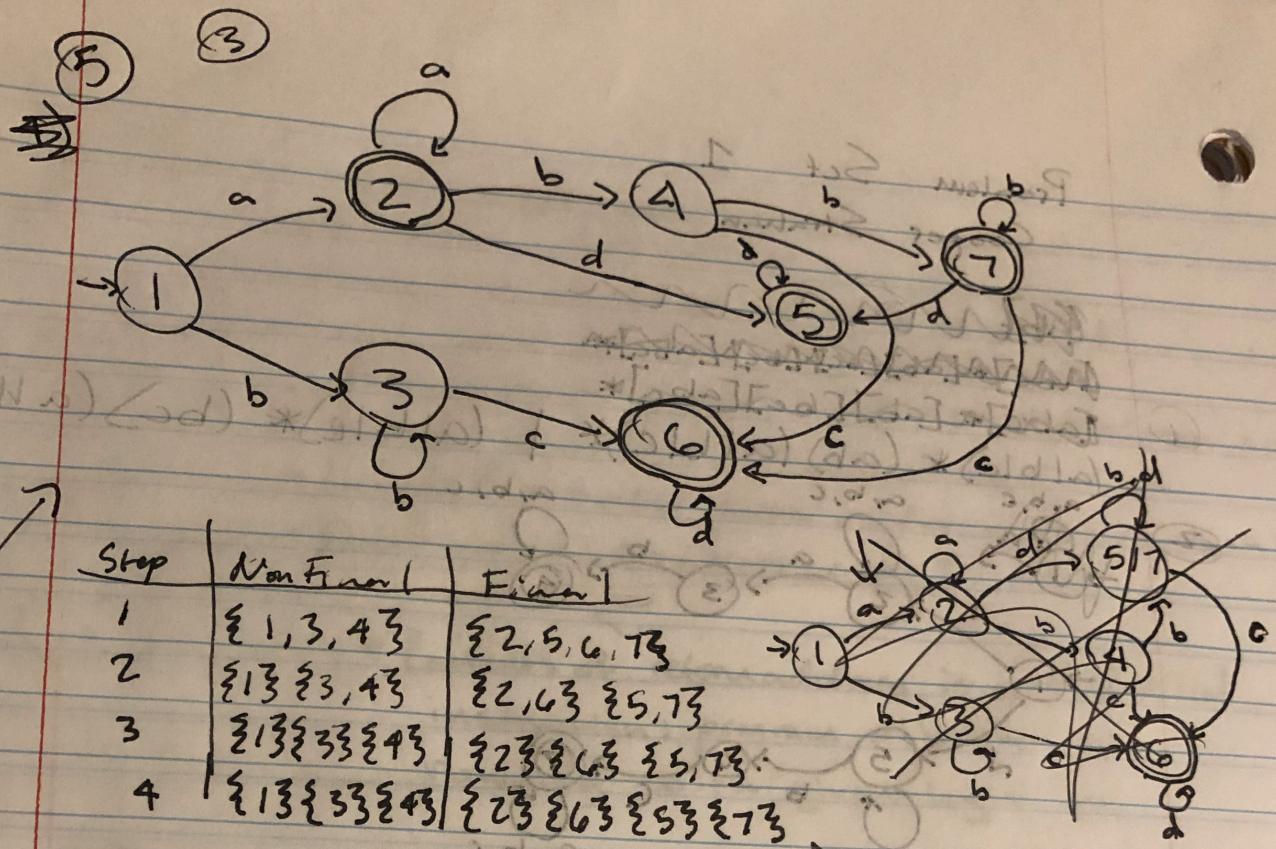
$\{1, 4\}$

State	a	b	c
$\{1\}$	$\{1, 2\}$	$\{1, 3\}$	$\{1\}$
$\{2\}$	$\{1, 2\}$	$\{1, 3, 4\}$	$\{1\}$
$\{3\}$	$\{1, 2\}$	$\{1, 3\}$	$\{1, 4\}$
$\{4\}$	$\{1, 3, 4\}$	$\{1, 2, 4\}$	$\{1, 4\}$
$\{5\}$	$\{1, 2, 4\}$	$\{1, 3, 4\}$	$\{1, 4\}$
$\{6\}$	$\{1, 2, 4\}$	$\{1, 3, 4\}$	$\{1, 4\}$

Reduced



This is reduced

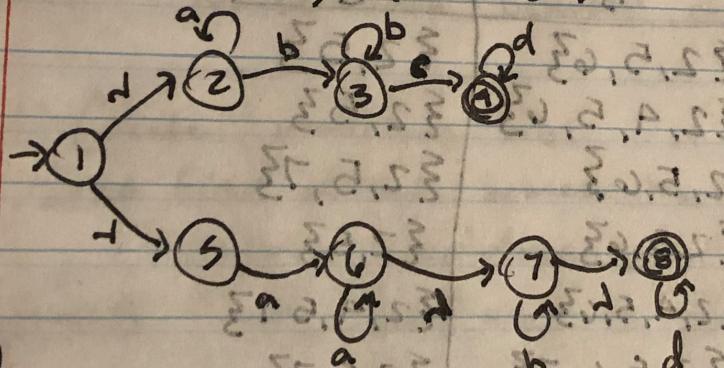


Stop	Non Final	Final
1	$\{1, 3, 4\}$	$\{2, 5, 6, 7\}$
2	$\{1, 3, 5, 4\}$	$\{2, 6, 5, 7\}$
3	$\{1, 3, 5, 3, 4\}$	$\{2, 3, 6, 5, 7\}$
4	$\{1, 3, 5, 3, 4\}$	$\{2, 3, 6, 5, 7\}$

Can't BE

Reduced

$$5) \quad (a^* b^* c^* d^*) \mid (a^* b^* d^*)$$



2)

State	a	b	c	d
1	$\{1, 2, 5\}$	$\{2, 1, 6, 7, 8\}$	$\{3\}$	—
2	$\{2, 4, 7, 8\}$	$\{2, 4, 7, 9\}$	$\{3, 7\}$	$\{8\}$
3	$\{3\}$	—	$\{3\}$	$\{4\}$
4	$\{3, 7\}$	—	$\{3, 7, 8\}$	$\{4\}$
5	$\{8\}$	—	—	$\{8\}$
6	$\{4\}$	—	—	$\{4\}$
7	$\{3, 7, 8\}$	$\{5, 2, 5\}$	$\{4\}$	$\{8\}$