

Math 322

Tues
Today
Review

Thurs
Exam
get all exams.

Next
wk

Dead day
@ 5³⁵
counts

(+) review

Next
Next
wk

Final
5³⁰ pm

12.5 #20 ex

-- BBIIII BB
 / 2
BBBBI BB--

4 mod 3

$$00 = 0 \pmod 3$$

11111111

P_1 P_2 P_3
 0 0 0
 0 0 0

BBB BBB (11) 1
 11
 2

--B1B-- $\xrightarrow{1}$ --B1B--

--B11B-- \rightarrow --B11B--

--B111B \rightarrow --B(111)B--

--B1111B \rightarrow --B(BBB)1B

B11111B \rightarrow --B(BBB)11B--

BXXXXXX XXXXX1B

B1B

12

$12 \pmod 3$

0

(S_1, B, S_8, B, R)
 (S_2, B, S_8, B, R)
 (S_3, B, S_8, B, R)

$(S_0, 1, S_1, 1, R)$
 $(S_1, 1, S_2, 1, R)$
 $(S_2, 1, S_3, 1, R)$
 $(S_3, 1, S_4, 1, L)$
 $(S_4, 1, S_5, B, L)$

cont.
 next
 page.

(S_5, I, S_6, B, L)

(S_6, I, S_7, B, R)

(S_7, B, S_7, B, R)

(S_7, I, S_1, I, R)

Exam 9 12 probs (7) i.e.

12.1 (3 probs) Languages (7)

Grammars

① English language
(trees!)

② → Make $0^n 1^n 2^n$ only given
productions.

derivation $S \Rightarrow \dots \Rightarrow$ asked

③ name that grammar.

answers? type 0 not 1 —
type 1 not 2 — why?!
→ type 2 not 3 —
type 3 —

(ex)

$S \rightarrow \Gamma$

$S \rightarrow aA$

$A \rightarrow Bb$

$B \rightarrow b$

12.2 F.S. w/ output.
(2 probs)

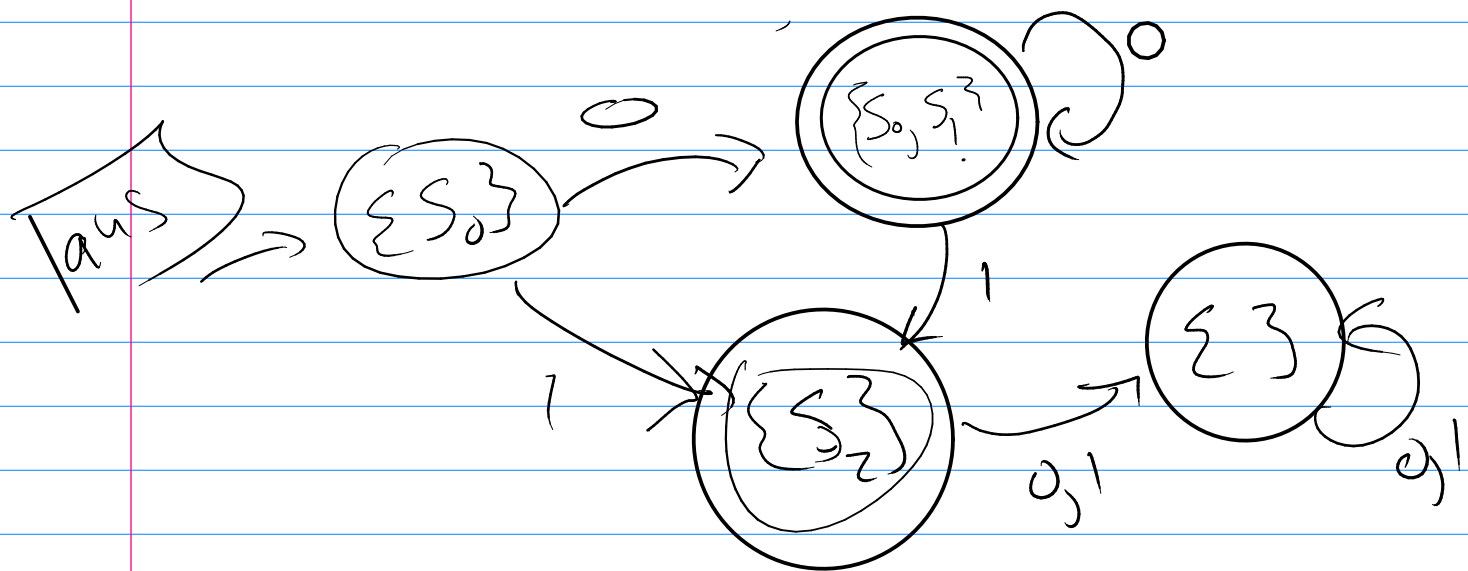
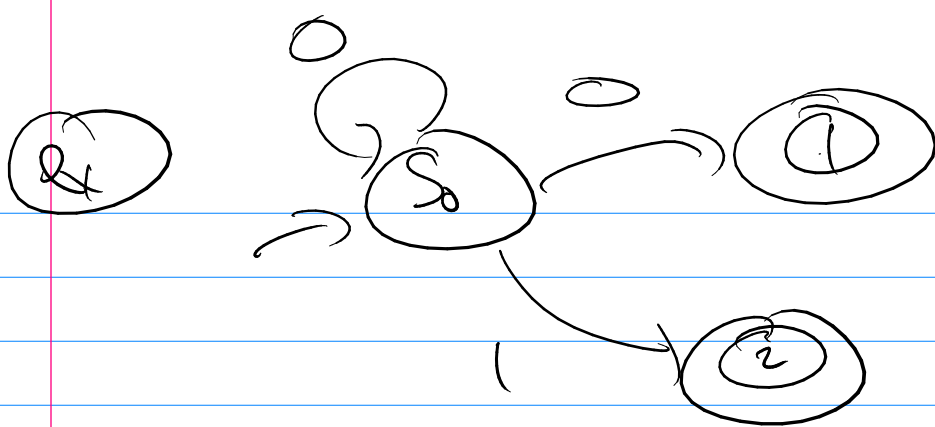
- ① given M and an input string.
→ give output string.
 - ② create M for a task
tabeats diagram.
- Candy Machine.

12.3 F.S.A (3 probs)

① Deterministic M
 $L(M)$

② Non-Det. M
 $L(M)$

③ Non-Det M → Make the
Deterministic M .



12.4 (2 probs) Language Rec.

F.S.A iff regular

① Given regular set \rightarrow Make F.S.A. that recog.

ex 0^*1001

$M_0: \rightarrow \bigcirc \xrightarrow{0} \bigcirc$

$M_1: \rightarrow \bigcirc \xrightarrow{1} \bigcirc$

$M_{0^*}: \text{??}$

$M_{01}:$

$M_{0^*1}:$

$M_{0^*1001}:$ $\begin{matrix} ? & ? & ? \\ \cdot & \cdot & \cdot \end{matrix}$

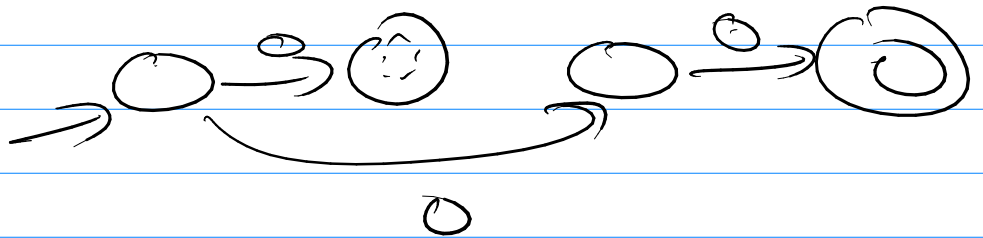
② Same as one above.

but be creative.

ex

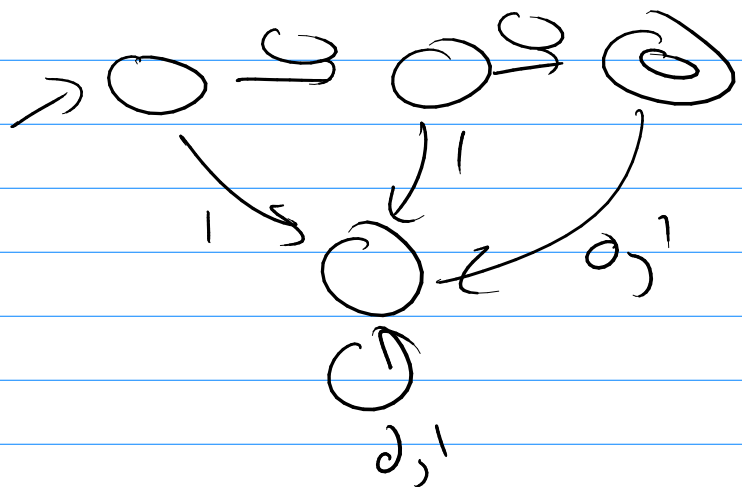
$M_{00}:$

$\frac{1}{1}$ above



$\frac{2}{2}$

M_{00}



12.5 (2 probs) Turing

① Given T with input,
→ run the machine.

② Make T for a given $f(n)$

extra credit

Given regular productions
construct F.S.A.

$S \rightarrow 1$
 $S \rightarrow 0A$
 $S \rightarrow 1B$
d.c.

