

Math 3342

Homework #5

Chapter 10, #4a, #11e

Extras #1, #4

#4a $S \rightarrow abS \mid \varepsilon$ makes $(ab)^*$

d $S \rightarrow aaSa \mid \varepsilon$ makes $(aaa)^*$

#11e $S \rightarrow [T] \mid []$

$T \rightarrow X, T \mid X$

$X \rightarrow 0 \mid 1 \mid \dots \mid 9$

Extra #1

$\frac{d}{db^2} \{xx^R\}$

When xx^R starts with b^2 ,

so $x = b^2y$, then

$$xx^R = b^2y y^R b^2$$

$$\hookrightarrow = \{yy^R b^2 \mid y \in \{a, b\}^*\}$$

Extra #4

$$L = \{(bab)^n b^n\}$$

$$\text{Let } D_i = \frac{d}{d(bab)^i} L = \{(bab)^{n-i} b^n\}$$

These are all different for various i ,

so L is not regular.