Notes on Midterm

Midterm scores

40s	1
50s	6
60s	17
70s	19
80s	8
90s	3

mean/median/mode 71/72/73

Problem 5

$L \subseteq \{a,b\}^*$

$L_1 = \{x \mid \exists c \in \Sigma \text{ s.t. } cx \in L\}$

$L_2 = \{x \mid \exists c \in \Sigma, y \in \Sigma^* \; x = cy, y \in L\}$

$L = \{\varepsilon, a, ab, aba\}$

$L_1 = \{\ \ , \varepsilon, b, ba\}$

$L_2 = \{a, b, aa, ba, aab, bab, aaba, baba\}$

$L_2 = (a \cup b) \cdot$ (regexp for L)

$= \Sigma \cdot L$

Fallacious "proof" #1

$\underline{L = \Sigma \cdot L_1}$

$\emptyset = \emptyset \cdot X$

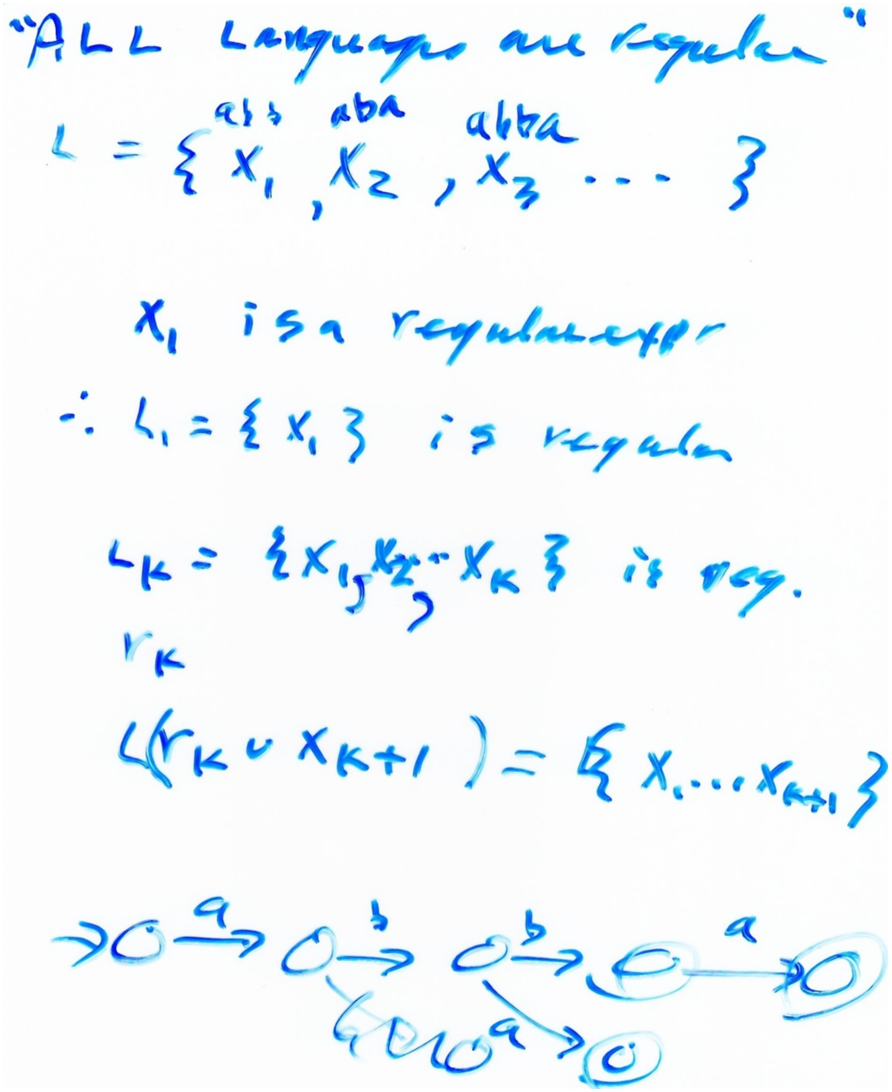
$L = R \cup L_1$

$\Sigma^* = \Sigma^* \cup X$

So by closure under $\cdot$

L_1 is regular

Fallacious “proof” #2



This correctly shows that each L_k is regular for each finite k, no matter how large. It does *not* show that L is regular; induction never “jumps” to the infinite “limit” case.

Fallacious “proof” #3

Correct Construction