1. $E \to E+E \mid T$

$T \to T \times T \mid (E) \mid a$

(a) $a, +, \times, (,)$

(b) E, T

c) S

d) E

e) a , $a \times (a \times a)$, $a \times (a)$

f) aa , $\times\times\times$, $(\times)$

2. $E \to E+E$

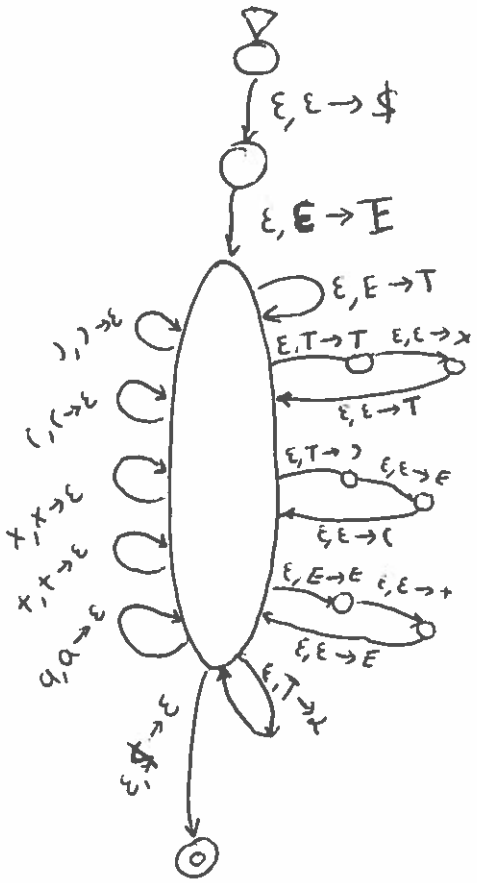
$E \to T$

$T \to T \times T$

$T \to (E)$

$T \to a$

$\Rightarrow$



3. $Z \to \varepsilon$

$\Phi \to +$

$M \to *$

$P_L \to ($

$P_R \to)$

$T \to a$

$S_0 \to E$

$S \to S_0 \Phi$

$E \to T Z$

$E \to S S_0$

$B \to E M$

$B' \to B E$

$R \to P_L S_0$

$T \to R P_R$

4. The language is not regular. The reason for that is because if we set $E \to T$ and $T \to (E)$, we enter an infinite loop of recursive parenthesis, described as

$$(^n)^n, \quad n > 0$$

which we have proven is not regular.

5. [redacted] Inline in HW10.md

6. Inline in HW10.md