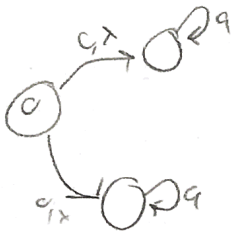
1. $Q = \{q_0, q_1\}$

$\Sigma = \{\}$

$\Gamma = \{\emptyset, \}$

$\delta = \{[q_0, (, \emptyset] \to [q_0, (], [q_0, \lambda], [q_0, \lambda, \emptyset] \to [q_1, \emptyset]\}$,

$S = q_0, F = \{q_1\}$



2. $S \to (S) \to (SS) \to ((S)S) \to ((S)S) \to ()S) \to (()).$

3. $S \to E$

$E \to E+T \mid T$

$T \to T \times F \mid F$

$F \to (E) \mid a$

$S \to E \to E+T \to T+T \to F+T \to a+T \to a+T \times F \to a+a \times a, (()(a+a) \times a$

4. It would depend on the E production. Some goes for the parse tree that would follow. This would give different trees for the same string.

5. $Q = \{q_0, q_1, q_2\}$ $\Sigma = \{(,)\}$.