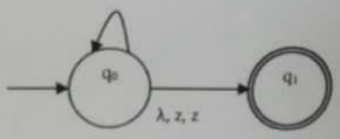
b. Provide a leftmost derivation for the string ((5*2)+7)

c. Draw a derivation tree for the string ((5*2)+7)

3. The following figure demonstrates an NPDA called M:

a, 0, 00 ; b, 1, 11
a, z, 0z ; b, 0, λ
b, z, 1z ; a, 1, λ



a. Show the sequence of moves made by M when processing the string **ababb**?

Answer: (1 mark)

(Q3)

a) $(q_0, ababb, z) \vdash (q_0, babb, 0z) \vdash (q_0, abb, z)$
$\vdash (q_0, bb, 0z) \vdash (q_0, b, z) \vdash (q_0, \lambda, z)$

b) Not accepted..

Part 2:

Q1. Let the language $L = \{b^n a^n, n \geq 0, n \neq 50\}$

a) Is L a context free language?

b) Justify your answer using closure properties of context free languages.

Q2. Given the following grammar:

$S \rightarrow E$

$E \rightarrow (E+E)$

$E \rightarrow (E*E)$

$E \rightarrow 0 \mid 1 \mid 2 \mid 3 \mid 4 \mid 5 \mid 6 \mid 7 \mid 8 \mid 9$

a. Is the above grammar ambiguous?

b. Provide a leftmost derivation for the string ((5*2)+7)

c. Draw a derivation tree for the string ((5*2)+7)

3. The following figure demonstrates an NPDA called M:

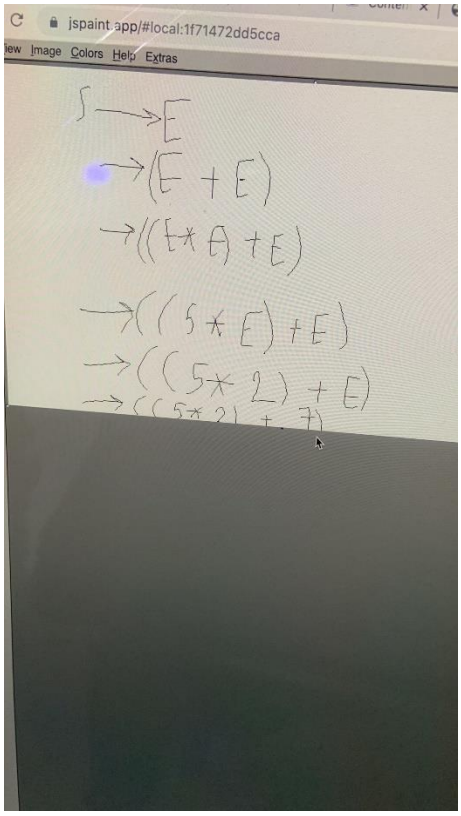
a, 0, 00 ; b, 1, 11

a, z, 0z ; b, 0, λ

Q2)

a. Yes, it is.

b.



c.