I_0 :

- $S' \rightarrow .S$, [\$]
- $S \rightarrow .E ; S, [\$]$
- $S \rightarrow .E ;, [\$]$
- S -> .id = E;, [\$]
- S -> .id = E ; S , [\$]
- E -> .T, [;]
- $E \rightarrow .E + T$, [;]
- E -> .E T, [;]
- E -> .T, [-]
- E -> .T, [+]
- T -> .F, [;]
- $T \rightarrow .T / F$, [;]
- E -> .E + T, [+]
- E -> .E T, [+]
- $E \rightarrow .E + T, [-]$
- T -> .T * F, [;]
- 1 , 1 , [,
- $E \rightarrow .E T$, [-]
- T -> .T * F, [-]
- $T \rightarrow .T * F$, [/]
- T -> .T / F, [*]
- $T \rightarrow .T / F$, [+]
- T -> .T / F, [-]
- F -> .number , [;]
- T -> .T * F, [*]
- T -> .T * F, [+]
- F -> .(E) , [;]
- T -> .F, [-]
- $T \rightarrow .F$, [+]
- $T \rightarrow .F, [*]$
- T -> .F , [/]
- F -> .id , [;]
- T -> .T / F, [/]
- F -> .(E),[*]
- - (/ , []
- $F \rightarrow .(E), [+]$
- $F \rightarrow .(E), [-]$
- F -> .(E) , [/]
- $F \rightarrow .id$, [*]
- $F \rightarrow .id$, [+]
- F -> .id, [-]
- F -> .id, [/]
- $F \rightarrow .number, [*]$
- F -> .number , [/]

```
F -> .number , [-]
F -> .number , [+]
```

I_1 :

 $F \rightarrow number., [/]$

F -> number. , [-]

 $F \rightarrow number., [*]$

F -> number., [;]

F -> number., [+]

I_2 :

S' -> S., [\$]

I_3 :

E -> T., [-]

 $T \rightarrow T .* F, [-]$

 $T \rightarrow T / F$, [+]

T -> T .* F, [/]

 $T \rightarrow T ./ F$, $[\ast]$

 $T \rightarrow T / F$, [-]

 $T \rightarrow T / F, [/]$

E -> T., [+]

T -> T .* F, [*]

T -> T .* F, [+]

 $T \rightarrow T ./ F$, [;]

E -> T., [;]

T -> T .* F, [;]

I_4 :

 $S \rightarrow E :; S, [\$]$

S -> E .;, [\$]

 $E \rightarrow E - T$, [;]

 $E \rightarrow E - T, [+]$

 $E \rightarrow E + T$, [-]

 $E \rightarrow E + T, [;]$

 $E \rightarrow E + T$, [+]

 $E \rightarrow E - T, [-]$

 I_5 :

- $T \rightarrow F.$, [/]
- $T \rightarrow F.$, [;]
- T -> F., [+]
- $T \rightarrow F.$, [-]
- $T \rightarrow F.$, [*]

I_6 :

- $F \rightarrow (.E), [/]$
- $F \rightarrow (.E), [;]$
- $F \rightarrow (.E), [+]$
- $F \rightarrow (.E), [-]$
- $F \rightarrow (.E), [*]$
- E -> .T, [)]
- E -> .E + T, [)]
- $E \rightarrow .E T$, [)]
- $T \rightarrow .T / F$, [)]
- E -> .T, [-]
- E -> .T, [+]
- $E \rightarrow .E + T$, [+]
- T -> .F, [)]
- T -> .T * F, [)]
- $E \rightarrow .E T$, [+]
- $E \rightarrow .E + T$, [-]
- $E \rightarrow .E T$, [-]
- T -> .T * F, [-]
- $T \rightarrow .T * F$, [/]
- $T \rightarrow .T / F$, [*]
- T -> .T / F, [+]
- $T \rightarrow .T / F$, [-]
- T -> .T * F, [*]
- $T \rightarrow .T * F$, [+]
- F -> .(E),[)]
- $F \rightarrow .id$, [)]
- $T \rightarrow .F$, [-]
- $T \rightarrow .F$, [+]
- T -> .F, [*]
- $T \rightarrow .F$, [/]
- $F \rightarrow .number, [)]$
- T -> .T / F, [/]
- $F \rightarrow .(E), [*]$
- F -> .(E),[+]
- $F \rightarrow .(E), [-]$
- $F \rightarrow .(E), [/]$

```
F -> .id, [*]
F \rightarrow .id, [+]
F -> .id , [-]
F -> .id, [/]
F -> .number , [*]
F -> .number , [/]
F -> .number , [-]
F \rightarrow .number, [+]
I<sub>7</sub>:
F -> id., [/]
S \rightarrow id = E;, [\$]
F -> id., [;]
F \rightarrow id., [+]
F -> id., [*]
S \rightarrow id = E; S, [\$]
F -> id., [-]
I_8:
T \rightarrow T * .F , [/]
T -> T * .F \; , [+]
T -> T * .F , [;]
T -> T * .F \;, [*]
T \rightarrow T * .F , [-]
F -> .id , [-]
F \rightarrow .number, [;]
F -> .id , [/]
F \rightarrow .(E), [*]
F \rightarrow .(E), [+]
F \rightarrow .number, [*]
F -> .id , [;]
F -> .(E),[-]
F \rightarrow .number, [/]
F \rightarrow .number, [-]
F -> .(E),[/]
F \rightarrow .number, [+]
F \rightarrow .id, [*]
F \rightarrow .(E), [;]
F -> .id , [+]
```

I₉:

- $T \rightarrow T / .F$, [*]
- $T -\!\!\!> T \, / \, .F$, [+]
- $T \rightarrow T / .F$, [;]
- $T \rightarrow T / .F$, [-]
- $T \rightarrow T / .F$, [/]
- F -> .id, [-]
- $F \rightarrow .number, [;]$
- F -> .id, [/]
- $F \rightarrow .(E), [*]$
- F -> .number , [*]
- F -> .(E) , [+]
- F -> .id , [;]
- $F \rightarrow .(E), [-]$
- $F \rightarrow .number, [/]$
- F -> .number , [-]
- F -> .(E), [/]
- $F \rightarrow .number, [+]$
- F -> .id, [*]
- $F \rightarrow .(E), [;]$
- F -> .id , [+]

I_{10} :

- $S \rightarrow E; .S, [\$]$
- $S \rightarrow E;.,[\$]$
- $S \rightarrow .E ; S , [\$]$
- $S \rightarrow .E;,[\$]$
- S -> .id = E;, [\$]
- S -> .id = E ; S , [\$]
- E -> .T, [;]
- $E \rightarrow .E + T$, [;]
- $E \rightarrow .E T$, [;]
- E -> .T, [-]
- E -> .T, [+]
- T -> .F, [;]
- $T \rightarrow .T / F$, [;]
- E -> .E + T, [+]
- E -> .E T, [+]
- E -> .E + T, [-]
- T -> .T * F, [;]
- $E \rightarrow .E T$, [-]
- T -> .T * F, [-]
- T -> .T * F , [/]
- $T \rightarrow .T / F$, [*]

- T -> .T / F, [+]
- T -> .T / F, [-]
- F -> .number , [;]
- T -> .T * F, [*]
- T -> .T * F, [+]
- F -> .(E) , [;]
- $T \rightarrow .F$, [-]
- $T \rightarrow .F$, [+]
- $T \rightarrow .F, [*]$
- $T \rightarrow .F, [/]$
- F -> .id , [;]
- $T \rightarrow .T / F$, [/]
- $F \rightarrow .(E), [*]$
- $F \rightarrow .(E), [+]$
- F -> .(E) , [-]
- F -> .(E), [/]
- F -> .id , [*]
- F -> .id , [+]
- F -> .id , [-]
- F -> .id , [/]
- 1 -> .iu , [/]
- $F \mathrel{->} .number \,, [*]$
- F -> .number , [/]
- $F \rightarrow .number, [-]$
- F -> .number , [+]

I_{11} :

- E -> E + .T, [-]
- $E \rightarrow E + .T, [;]$
- $E \rightarrow E + .T$, [+]
- T -> .F, [-]
- $T \rightarrow .T * F$, [-]
- T -> .F, [;]
- T -> .F, [+]
- T -> .T / F, [;]
- $T \rightarrow .T / F$, [+]
- $T \rightarrow .T / F$, [-]
- T -> .T * F, [;]
- $T \rightarrow .T * F$, [+]
- T -> .F, [*]
- $T \rightarrow .T / F$, [*]
- T -> .T * F, [/]
- F -> .id , [-]
- F -> .number , [;]

- $T \rightarrow .F$, [/]
- $F \rightarrow .(E), [+]$
- F -> .(E) , [-]
- F -> .id , [;]
- T -> .T * F, [*]
- F -> .number , [-]
- $F \rightarrow .number$, [+]
- T -> .T / F, [/]
- F -> .(E),[;]
- F -> .id, [+]
- $F \rightarrow .(E), [*]$
- $F \rightarrow .(E), [/]$
- F -> .id, [*]
- $F \rightarrow .id$, [/]
- F -> .number , [*]
- $F \rightarrow .number, [/]$

I_{12} :

- $E \rightarrow E .T, [;]$
- $E \rightarrow E .T, [+]$
- $E \rightarrow E .T$, [-]
- T -> .F, [-]
- T -> .T * F, [-]
- $T \rightarrow .F$, [;]
- T -> .F, [+]
- $T -> .T \, / \, F$, [;]
- $T \rightarrow .T / F$, [+]
- $T \rightarrow .T / F$, [-]
- T -> .T * F, [;]
- T -> .T * F, [+]
- T -> .F, [*]
- T -> .T / F, [*]
- T -> .T * F, [/]
- F -> .id , [-]
- F -> .number , [;]
- $T \rightarrow .F, \lceil / \rceil$
- $F \rightarrow .(E), [+]$
- F -> .(E),[-]
- F -> .id, [;]
- T -> .T * F, [*]
- F -> .number , [-]
- $F \rightarrow .number, [+]$
- T -> .T / F, [/]

```
F \rightarrow .(E), [;]
```

- F -> .id , [+]
- F -> .(E),[*]
- F -> .(E), [/]
- F -> .id , [*]
- F -> .id, [/]
- $F \rightarrow .number, [*]$
- F -> .number , [/]

I_{13} :

- $F \rightarrow number., [/]$
- F -> number., [-]
- F -> number., [*]
- F -> number., [+]
- F -> number. , [)]

I_{14} :

- $T \rightarrow T / F, []$
- $E \rightarrow T., [-]$
- T -> T .* F, [-]
- $T -> T \mathrel{./} F$, [+]
- T -> T .* F, [/]
- $T \rightarrow T ./ F$, $[\ast]$
- T -> T ./ F, [-]
- E -> T., [)]
- T -> T ./ F, [/]
- $E \rightarrow T., [+]$
- T -> T .* F, [*]
- T -> T .* F, [)]
- T -> T .* F, [+]

$I_{15}:$

- $E \rightarrow E + T, []$
- F -> (E.),[-]
- $E \rightarrow E T, [+]$
- $E \rightarrow E + T$, [-]
- $F \rightarrow (E.), [/]$
- $E \rightarrow E T, []$
- E -> E .+ T, [+]
- $F \rightarrow (E.), [;]$
- $F \rightarrow (E.), [+]$

- $F \rightarrow (E.), [*]$
- $E \rightarrow E T$, [-]

I_{16} :

- T -> F., [/]
- T -> F., [+]
- T -> F., [-]
- $T \rightarrow F., []$
- $T \rightarrow F.$, [*]

I_{17} :

- $F \rightarrow (.E), [/]$
- $F \rightarrow (.E), [+]$
- $F \rightarrow (.E), [-]$
- F -> (.E),[*]
- $F \rightarrow (.E), [)]$
- E -> .T, [)]
- $E \rightarrow .E + T$, [)]
- $E \rightarrow .E T$, [)]
- $T \rightarrow .T / F$, [)]
- E -> .T, [-]
- E -> .T, [+]
- $E \rightarrow .E + T$, [+]
- T -> .F, [)]
- $T \rightarrow .T * F, [)]$
- E -> .E T, [+]
- E -> .E + T, [-]
- $E \rightarrow .E T$, [-]
- T -> .T * F, [-]
- $T \rightarrow .T * F, [/]$
- $T \rightarrow .T / F$, [*]
- T -> .T / F, [+]
- $T \rightarrow .T / F$, [-]
- T -> .T * F, [*]
- T -> .T * F, [+]
- $F \rightarrow .(E), [)]$
- F -> .id, [)]
- T -> .F, [-]
- $T \rightarrow .F$, [+]
- T -> .F, [*]
- T -> .F, [/]
- F -> .number , [)]

- $T \rightarrow .T / F$, [/]
- $F \rightarrow .(E), [*]$
- $F \rightarrow .(E), [+]$
- F -> .(E), [-]
- F -> .(E) , [/]
- F -> .id, [*]
- $F \rightarrow .id$, [+]
- F -> .id , [-]
- F -> .id , [/]
- F -> .number , [*]
- F -> .number , [/]
- F -> .number , [-]
- F -> .number , [+]

I_{18} :

- F -> id., [/]
- $F \rightarrow id., [+]$
- F -> id., [*]
- F -> id., [-]
- F -> id., [)]

I_{19} :

- S -> id = .E;, [\$]
- $S \rightarrow id = .E ; S, [\$]$
- E -> .T, [;]
- E -> .E + T, [;]
- $E \rightarrow .E T, [;]$
- $T \rightarrow .F, [;]$
- T -> .T / F, [;]
- $E \rightarrow .T$, [-]
- E -> .T, [+]
- E -> .E + T, [+]
- $E \rightarrow .E T, [+]$
- E -> .E + T, [-]
- T -> .T * F, [;]
- E -> .E T , [-]
- $T \rightarrow .T * F$, [-]
- $T \rightarrow .T * F$, [/]
- T -> .T / F, [*]
- T -> .T / F, [+]
- F -> .number , [;]
- T -> .T / F, [-]

- T -> .T * F, [*]
- $T \rightarrow .T * F$, [+]
- F -> .(E),[;]
- $T \rightarrow .F$, [-]
- $T \rightarrow .F$, [+]
- T -> .F, [*]
- $T \rightarrow .F$, [/]
- F -> .id, [;]
- $T \rightarrow .T / F$, [/]
- F -> .(E),[*]
- $F \rightarrow .(E), [+]$
- F -> .(E),[-]
- F -> .(E), [/]
- F -> .id , [*]
- F -> .id , [+]
- F -> .id , [-]
- F -> .id , [/]
- F -> .number , [*]
- F -> .number , [/]
- F -> .number , [-]
- F -> .number , [+]

I_{20} :

- T -> T * F. , [/]
- T -> T * F., [*]
- $T \rightarrow T * F.$, [-]
- $T \rightarrow T * F., [+]$
- T -> T * F. , [;]

I_{21} :

- F -> id., [/]
- F -> id., [;]
- F -> id., [+]
- F -> id., [*]
- F -> id., [-]

I_{22} :

- $T \rightarrow T / F.$, [-]
- T -> T / F., [*]
- $T -> T \, / \, F.$, [+]
- T -> T / F., [;]

```
T \rightarrow T / F., [/]
```

$I_{23}:$

 $S \rightarrow E ; S., [\$]$

$I_{24}:$

- T -> T .* F, [-]
- $T \rightarrow T ./ F$, [+]
- $T \rightarrow T ./ F$, $[\ast]$
- $T \rightarrow T .* F, [/]$
- $E \rightarrow E + T.$, [;]
- $T \rightarrow T / F$, [-]
- T -> T ./ F, [/]
- T -> T .* F , [*]
- T -> T .* F, [+]
- T -> T ./ F , [;]
- E -> E + T., [+]
- E -> E + T., [-]
- T -> T .* F, [;]

I_{25} :

- T -> T .* F, [-]
- $T \rightarrow T ./ F$, [+]
- $T \rightarrow T ./ F, [*]$
- T -> T .* F , [/]
- $T \rightarrow T / F$, [-]
- T -> T / F, [/]
- E -> E T., [;]
- T -> T .* F, [*]
- T -> T .* F , [+]
- T -> T ./ F , [;]
- E -> E T., [-]
- E -> E T., [+]
- T -> T .* F, [;]

I_{26} :

- $T \rightarrow T * .F \; , \; [/]$
- T -> T * .F , [)]
- $T -> T * .F \; , [+]$
- T -> T * .F , [*]

```
T \rightarrow T * .F \; , [-]
```

F -> .id , [-]

F -> .id , [/]

F -> .number , [)]

 $F \rightarrow .(E), [*]$

 $F \rightarrow .(E), [+]$

 $F \rightarrow .number, [*]$

F -> .(E), [-]

F -> .(E),[)]

 $F \rightarrow .number, [/]$

F -> .number , [-]

F -> .(E), [/]

F -> .number , [+]

F -> .id , [*]

F -> .id, [)]

 $F \rightarrow .id$, [+]

I_{27} :

 $T \rightarrow T / .F, [*]$

 $T \rightarrow T / .F, [)]$

 $T \rightarrow T / .F$, [+]

 $T \rightarrow T / .F$, [-]

 $T \rightarrow T / .F, [/]$

 $F \rightarrow .id$, [-]

F -> .id, [/]

 $F \rightarrow .(E), [*]$

 $F \rightarrow .number, [)]$

F -> .number , [*]

 $F \rightarrow .(E), [+]$

 $F \rightarrow .(E), [-]$

 $F \rightarrow .(E),[)]$

 $F \rightarrow .number$, [/]

 $F \rightarrow .number, [-]$

F -> .(E) , [/]

 $F \rightarrow .number, [+]$

F -> .id, [*]

 $F \rightarrow .id$, [)]

F -> .id, [+]

$I_{28}:$

 $F \rightarrow (E)., [/]$

F -> (E).,[-]

```
F -> (E).,[;]
```

$$F \rightarrow (E)., [+]$$

$$F \rightarrow (E)., [*]$$

I_{29} :

- $E \rightarrow E + .T$, [)]
- E -> E + .T, [-]
- $E \rightarrow E + .T$, [+]
- T -> .F, [-]
- T -> .T * F, [-]
- T -> .T / F, [)]
- T -> .F, [+]
- T -> .T / F, [+]
- T -> .T / F, [-]
- $T \rightarrow .F, [)]$
- $T \rightarrow .T * F, [)]$
- $T \rightarrow .T * F$, [+]
- T -> .F, [*]
- $T -> .T \, / \, F$, [*]
- T -> .T * F, [/]
- F -> .id , [-]
- $T \rightarrow .F$, [/]
- F -> .number , [)]
- F -> .(E) , [+]
- $F \rightarrow .(E), [-]$
- T -> .T * F, [*]
- F -> .(E),[)]
- F -> .number , [-]
- F -> .number , [+]
- T -> .T / F, [/]
- F -> .id , [)]
- F -> .id, [+]
- $F \rightarrow .(E), [*]$
- $F \rightarrow .(E), [/]$
- $F \rightarrow .id$, [*]
- F -> .id, [/]
- $F \rightarrow .number, [*]$
- F -> .number , [/]

I_{30} :

- $E \rightarrow E .T$, [+]
- $E \rightarrow E .T$, [)]

- $E \rightarrow\! E .T \,,$ [-]
- $T \rightarrow .F$, [-]
- $T \rightarrow .T * F$, [-]
- T -> .F, [+]
- T -> .T / F, [)]
- T -> .T / F, [+]
- $T \rightarrow .T / F$, [-]
- $T \rightarrow .F, [)]$
- $T \rightarrow .T * F, [)]$
- T -> .T * F, [+]
- T -> .F, [*]
- $T -> .T \, / \, F$, [*]
- T -> .T * F, [/]
- F -> .id , [-]
- $T \rightarrow .F$, [/]
- F -> .number , [)]
- $F \rightarrow .(E), [+]$
- $F \rightarrow .(E), [-]$
- T -> .T * F, [*]
- F -> .(E),[)]
- $F \rightarrow .number, [-]$
- $F \rightarrow .number, [+]$
- $T \rightarrow .T / F$, [/]
- F -> .id, [)]
- F -> .id, [+]
- $F \rightarrow .(E), [*]$
- $F \rightarrow .(E), [/]$
- $F \rightarrow .id$, [*]
- F -> .id , [/]
- F -> .number , [*]
- F -> .number , [/]

I_{31} :

- $E \rightarrow E + T, []$
- F -> (E.),[-]
- $E \rightarrow E T$, [+]
- $E \rightarrow E + T, [-]$
- F -> (E.), [/]
- $E \rightarrow E T, []$
- $E \rightarrow E + T$, [+]
- $F \rightarrow (E.), []$
- $F \rightarrow (E.), [+]$
- $F \rightarrow (E.), [*]$

$E \rightarrow E - T, [-]$

$I_{32}:$

- $S \rightarrow id = E :;, [\$]$
- $E \rightarrow E .- T, [;]$
- $E \rightarrow E T$, [+]
- $E \rightarrow E + T, [-]$
- $S \rightarrow id = E .; S, [\$]$
- $E \rightarrow E + T, [;]$
- $E \rightarrow E + T, [+]$
- $E \rightarrow E T, [-]$

I_{33} :

- T -> T * F., [/]
- T -> T * F., [)]
- T -> T * F., [*]
- T -> T * F., [-]
- T -> T * F., [+]

I_{34} :

- $T \rightarrow T / F.$, [-]
- $T \rightarrow T / F.$, [*]
- T -> T / F., [+]
- T -> T / F. , [/]
- $T \rightarrow T / F. \; , [)]$

I_{35} :

- $T \rightarrow T / F, []$
- T -> T .* F, [-]
- $T \rightarrow T / F$, [+]
- $T \rightarrow T ./ F$, [*]
- T -> T .* F, [/]
- T -> T ./ F, [-]
- $T \rightarrow T / F, [/]$
- $T \rightarrow T * F, [*]$
- T -> T .* F, [)]
- $T \rightarrow T * F, [+]$
- $E \rightarrow E + T., [+]$
- $E \rightarrow E + T.$, [)]
- E -> E + T., [-]

I_{36} :

- $T \rightarrow T / F, [)]$
- T -> T .* F, [-]
- T -> T ./ F, [+]
- $T \rightarrow T ./ F, [*]$
- T -> T .* F, [/]
- $T \rightarrow T / F$, [-]
- $T \rightarrow T / F, [/]$
- T -> T .* F, [*]
- T -> T .* F, [)]
- T -> T .* F, [+]
- E -> E T., [)]
- $E \rightarrow E T.$, [-]
- E -> E T., [+]

I_{37} :

- F -> (E)., [/]
- $F \rightarrow (E)., [-]$
- F -> (E).,[+]
- F -> (E).,[)]
- $F \rightarrow (E)., [*]$

I_{38} :

- $S \rightarrow id = E;.,[\$]$
- $S \rightarrow id = E ; .S , [\$]$
- S -> .E; S, [\$]
- $S \rightarrow .E;,[\$]$
- S -> .id = E;, [\$]
- S -> .id = E ; S , [\$]
- E -> .T, [;]
- E -> .E + T, [;]
- E -> .E T, [;]
- E -> .T, [-]
- E -> .T, [+]
- T -> .F, [;]
- T -> .T / F, [;]
- $E \rightarrow .E + T$, [+]
- E -> .E T, [+]
- $E \rightarrow .E + T$, [-]
- T -> .T * F, [;]

- $E \rightarrow .E T$, [-]
- T -> .T * F, [-]
- T -> .T * F, [/]
- T -> .T / F, [*]
- T -> .T / F, [+]
- T -> .T / F, [-]
- F -> .number , [;]
- T -> .T * F, [*]
- $T \rightarrow .T * F$, [+]
- F -> .(E),[;]
- $T \rightarrow .F$, [-]
- $T \rightarrow .F$, [+]
- T -> .F, [*]
- $T \rightarrow .F$, [/]
- F -> .id, [;]
- $T -> .T \, / \, F$, [/]
- F -> .(E),[*]
- $F \rightarrow .(E), [+]$
- F -> .(E),[-]
- F -> .(E) , [/]
- $F \rightarrow .id$, [*]
- F -> .id , [+]
- F -> .id , [-]
- F -> .id , [/]
- $F \rightarrow .number, [*]$
- F -> .number , [/]
- F -> .number , [-]
- $F \rightarrow .number, [+]$

I_{39} :

 $S \rightarrow id = E ; S., [\$]$