



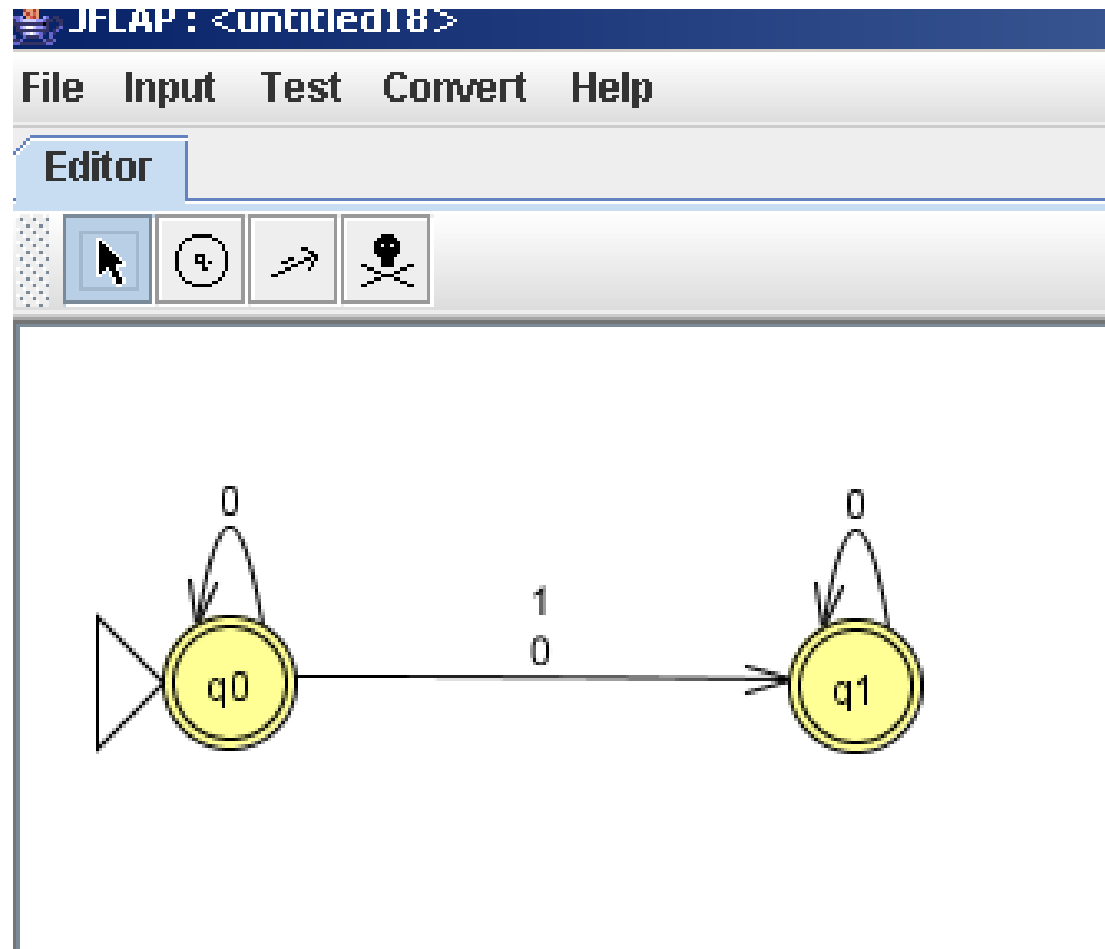
# Expressões Regulares

Conversão de AF para ER no JFLAP

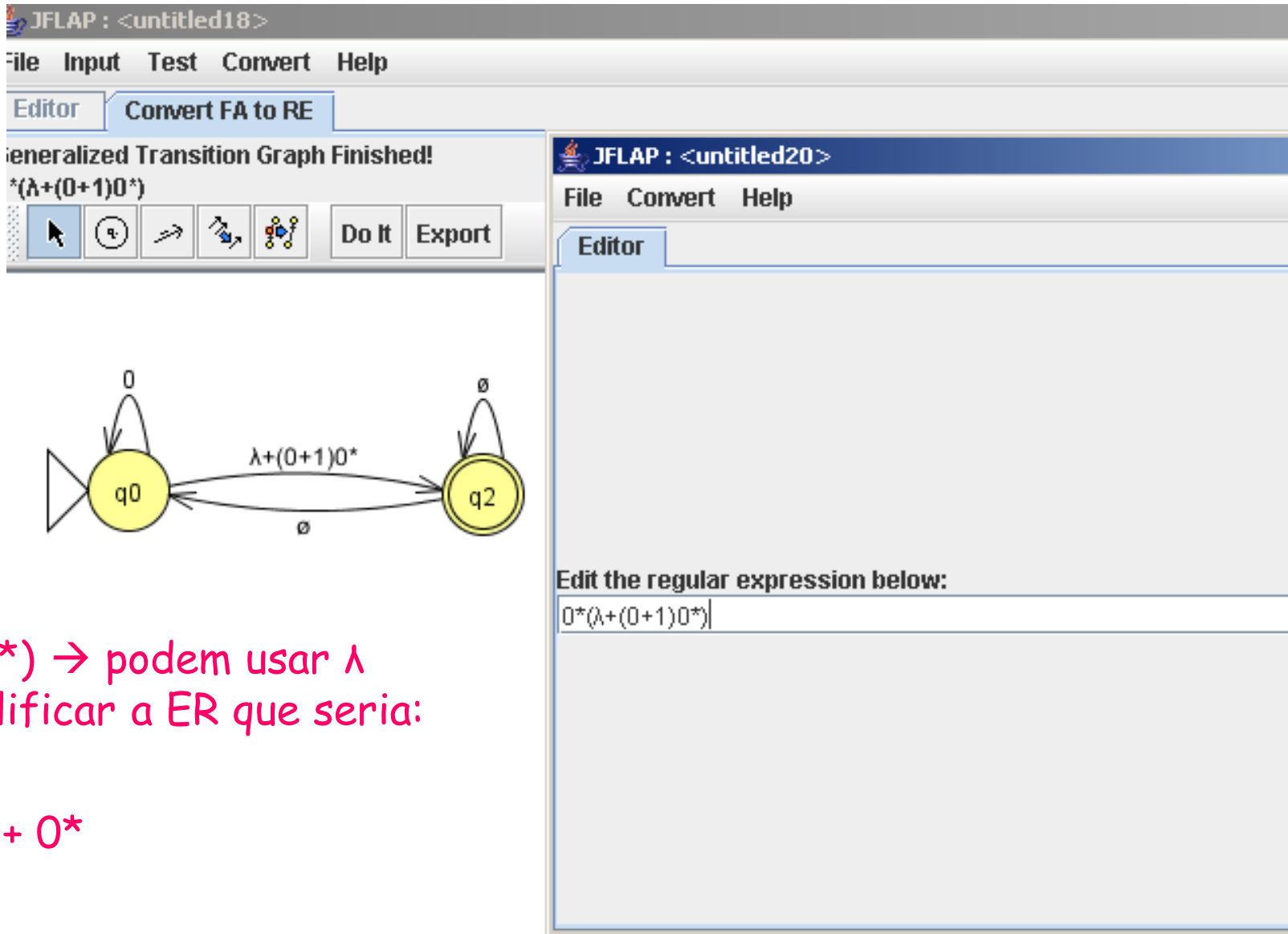
Equivalências entre AFD, AFND, AF- $\lambda$  (AF com movimentos nulos), ER, GR

# Conversão de AF para ER no JFLAP

- O conjunto de cadeias sobre  $\{0,1\}$  que tenha no **máximo** um 1.



# Conversão no JFLAP



The screenshot displays two windows from the JFLAP software. The left window, titled "JFLAP : <untitled18>", shows a "Generalized Transition Graph Finished!" for the regular expression  $0^*(\lambda+(0+1)0^*)$ . The graph has two states,  $q_0$  and  $q_2$ , both of which are accepting states (indicated by double circles).  $q_0$  is the start state (indicated by a triangle). Transitions are: a self-loop on  $q_0$  labeled  $0$ ; a transition from  $q_0$  to  $q_2$  labeled  $\lambda+(0+1)0^*$ ; and a transition from  $q_2$  to  $q_0$  labeled  $\emptyset$ . A self-loop on  $q_2$  is labeled  $\emptyset$ . The right window, titled "JFLAP : <untitled20>", shows an empty "Editor" field.

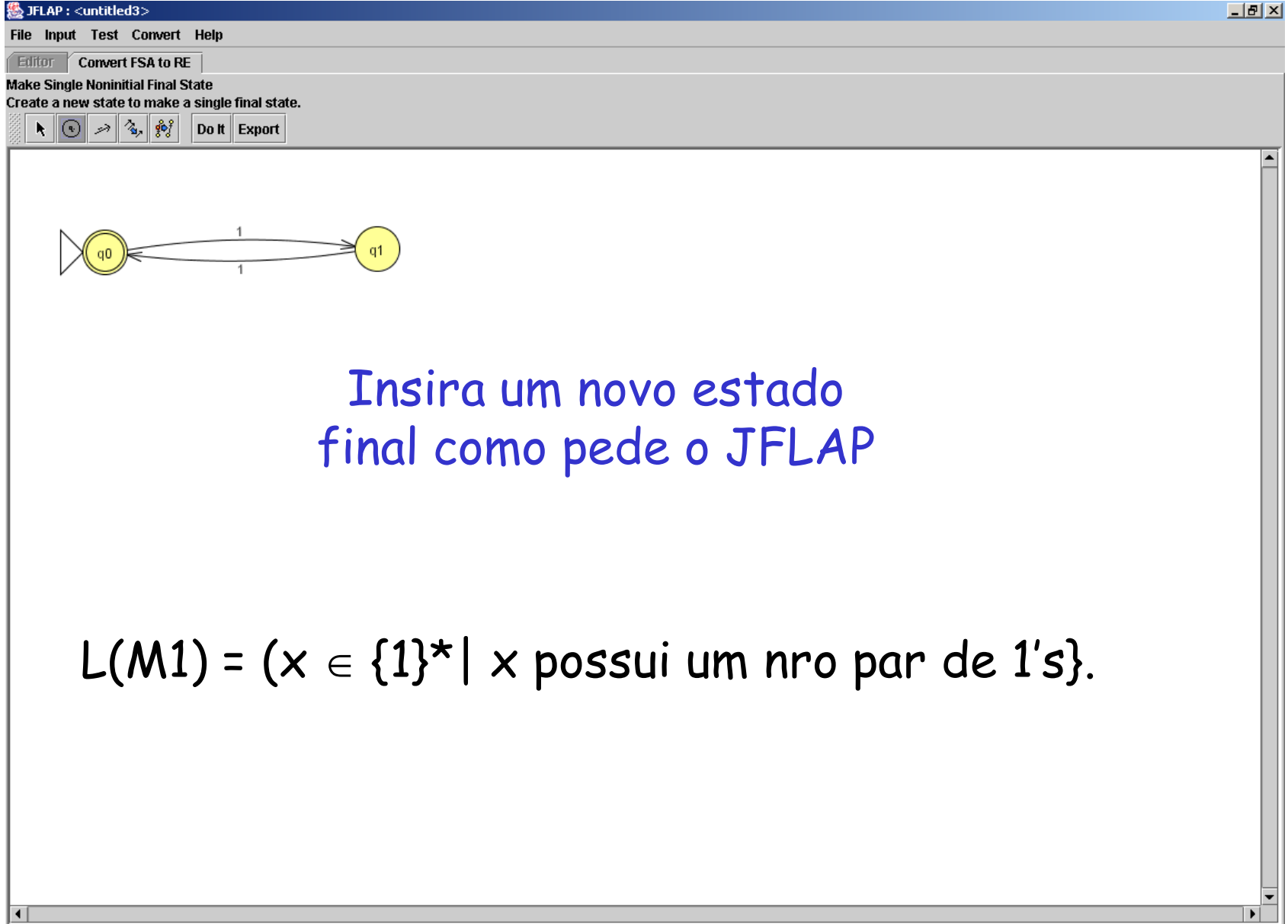
$0^*(\lambda+(0+1)0^*) \rightarrow$  podem usar  $\lambda$   
para simplificar a ER que seria:

$$0^* (1+0) 0^* + 0^*$$

Façam o AF para a seguinte linguagem

- $L(M1) = \{x \in \{1\}^* \mid x \text{ possui um nro par de 1's}\}.$

# Conversão de AF para ER no JFLAP



Make Single Noninitial Final State  
Create a new state to make a single final state.

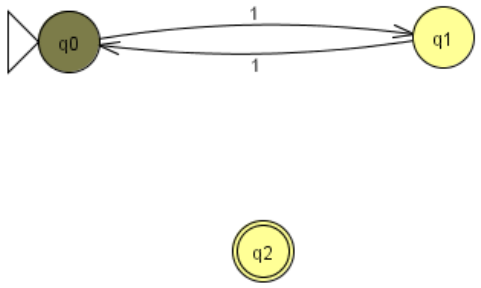
Do It Export

Insira um novo estado final como pede o JFLAP

$L(M1) = \{x \in \{1\}^* \mid x \text{ possui um nro par de } 1\text{'s}\}.$

Make Single Noninitial Final State  
Put lambda transitions from old final states to new.

Do It Export



Clique em  
Do it!

# Coloque transições nulas nos estados sem transição

JFLAP: <untitled3>

File Input Test Convert Help

Editor Convert FSA to RE

Reform Transitions  
Put empty transitions between states with no transitions. 6 more empty transitions needed.

Do It Export

```
graph LR; q0((q0)) -- 1 --> q1((q1)); q1 -- 1 --> q0; q0 -- λ --> q2((q2)); style q0 stroke-width:4px; style q1 stroke-width:2px; style q2 stroke-width:2px;
```

Clique em  
Do it!

Iniciar Journal of Educational T... http://teia.inf.ufrgs.br/c... aula8 JFLAP: <untitled3> Microsoft PowerPoint - [...]

09:46

# Completa as 6 transições faltantes

JFLAP : <untitled3>

File Input Test Convert Help

Editor Convert FSA to RE

Remove States  
Use the collapse state tool to remove nonfinal, noninitial states. 1 more removals needed.

Do it Export

```
graph TD; q0((q0)) -- 0 --> q0; q1((q1)) -- 0 --> q1; q0 -- 1 --> q1; q1 -- 1 --> q0; q0 -- 1 --> q2((q2)); q2 -- 1 --> q0; q1 -- 0 --> q2; q2 -- 0 --> q1;
```

Clique em  
Do it!

Iniciar Journal of Educational T... http://teia.inf.ufrgs.br/c... aula8 JFLAP : <untitled3> Microsoft PowerPoint - [...]

09:48

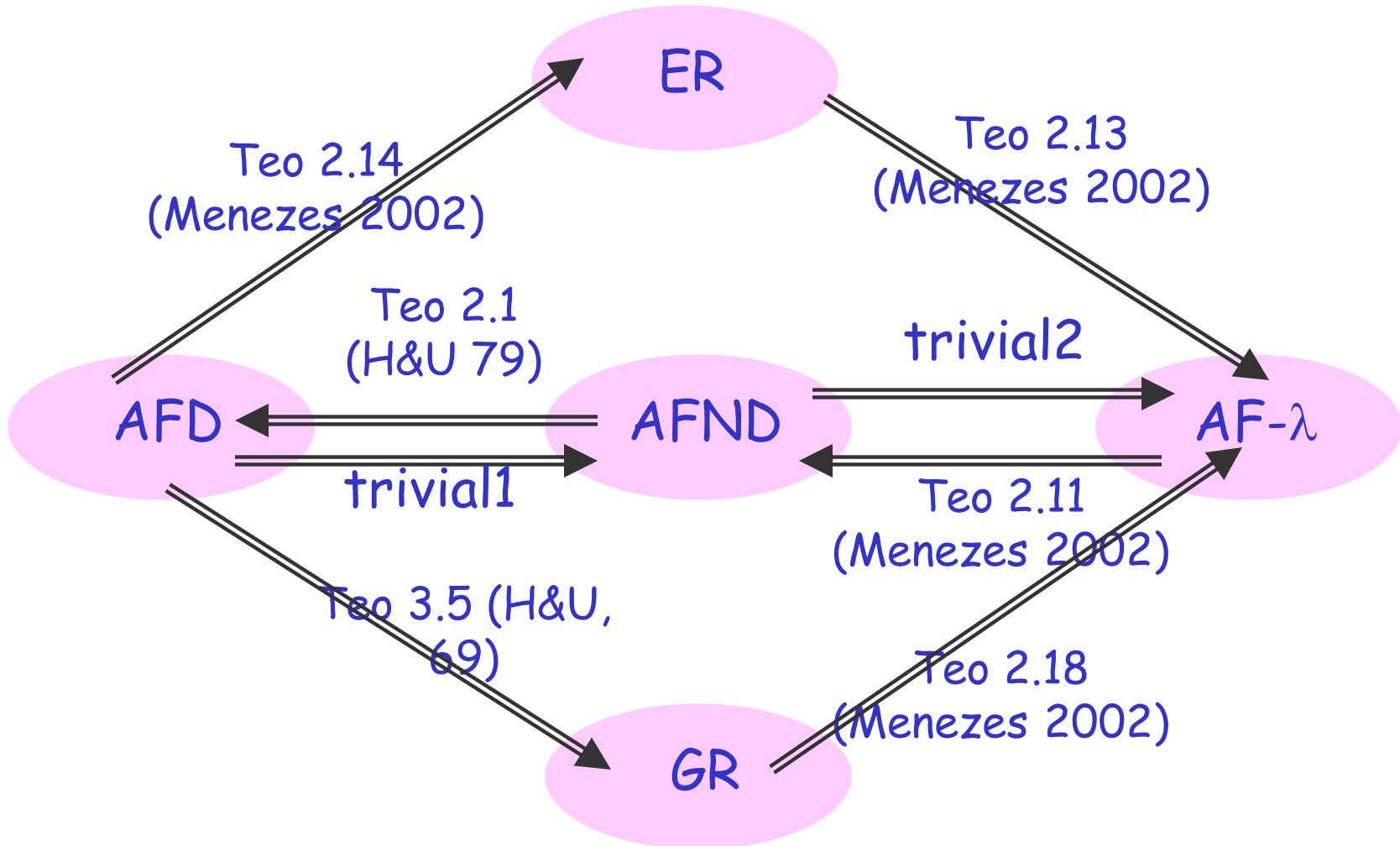


# Grafo terminado

The image shows a screenshot of the JFLAP software interface. The main window, titled "JFLAP : <untitled3>", displays a transition graph with two states,  $q_0$  and  $q_2$ . State  $q_0$  is the start state, indicated by a double circle. State  $q_2$  is the final state, indicated by a double circle. Transitions are as follows: a self-loop on  $q_0$  labeled "11", a transition from  $q_0$  to  $q_2$  labeled "1", and a transition from  $q_2$  to  $q_0$  labeled "0". A message bar at the top of the window states "Generalized Transition Graph Finished! (11)\*". Below the graph, a smaller window titled "JFLAP : <untitled6>" is open, showing the "Editor" tab. It contains the text "Edit the regular expression below:" followed by a text box containing "(11)\*". A large black arrow points from the text box in the smaller window down to the regular expression "(11)\*" displayed in blue text below the main window. The Windows taskbar at the bottom shows several open applications, including "Iniciar", "Journal of Educational T...", "http://teia.inf.ufrgs.br/c...", "aula8", "JFLAP : <untitled3>", "JFLAP : <untitled6>", "Microsoft PowerPoint - [...]", and a system clock showing "09:51".

# Equivalências entre AFD, AFND, AF- $\lambda$ , ER, GR

Trivial2: decorre da definição



Trivial1: colocar { } nos estados