# Apresentar o programa R usando matemática e estatística aos alunos do Ensino Médio

Edwirde Luiz Silva
Clevia Bento de Oliveira

Universidade Estadual da Paraíba - UEPB

# Sumário

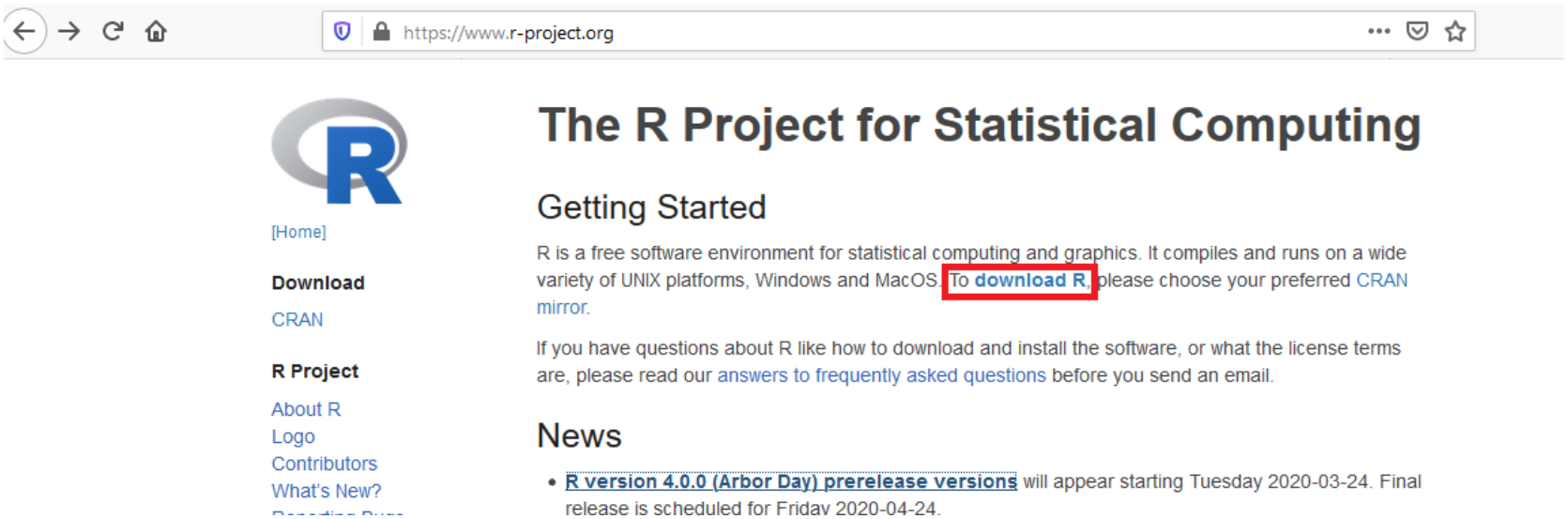
# O que é R?

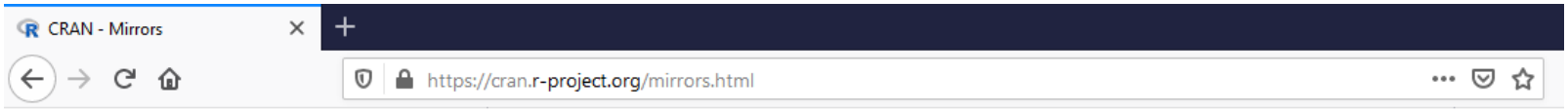
# O que é R?

R é uma linguagem de programação voltada à manipulação, análise e visualização de dados. Ele tem diversas funções, desde uma calculadora científica, até a realização de complexas análises estatísticas.

# Como fazer o download do R?

- Pelo site: https://www.r-project.org/



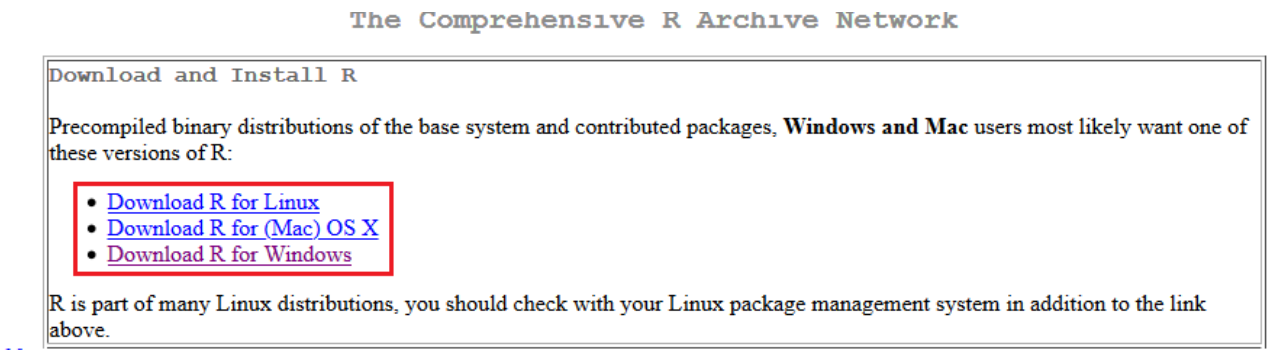



## CRAN Mirrors

The Comprehensive R Archive Network is available at the following URLs, please choose a location close to you. Some statistics on the status of the mirrors can be found windows old release.

If you want to host a new mirror at your institution, please have a look at the CRAN Mirror HOWTO.

| | |
|---|---|
| 0-Cloud | |
| https://cloud.r-project.org/ | Automatic redirection to servers worldwide, currently sponsored by Rstudio |
| Algeria | |
| https://cran.usthb.dz/ | University of Science and Technology Houari Boumediene |
| Argentina | |
| http://mirror.fcaglp.unlp.edu.ar/CRAN/ | Universidad Nacional de La Plata |
| Australia | |
| https://cran.csiro.au/ | CSIRO |
| https://mirror.aarnet.edu.au/pub/CRAN/ | AARNET |
| https://cran.ms.unimelb.edu.au/ | School of Mathematics and Statistics, University of Melbourne |
| https://cran.curtin.edu.au/ | Curtin University of Technology |
| Austria | |
| https://cran.wu.ac.at/ | Wirtschaftsuniversität Wien |
| Belgium | |
| https://www.freestatistics.org/cran/ | Patrick Wessa |
| https://lib.ugent.be/CRAN/ | Ghent University Library |
| Brazil | |
| https://nbcgib.uesc.br/mirrors/cran/ | Computational Biology Center at Universidade Estadual de Santa Cruz |
| https://cran-r.c3sl.ufpr.br/ | Universidade Federal do Parana |
| https://cran.fiocruz.br/ | Oswaldo Cruz Foundation, Rio de Janeiro |
| https://vps.fmvz.usp.br/CRAN/ | University of Sao Paulo, Sao Paulo |
| https://brieger.esalq.usp.br/CRAN/ | University of Sao Paulo, Piracicaba |
| Bulgaria | |



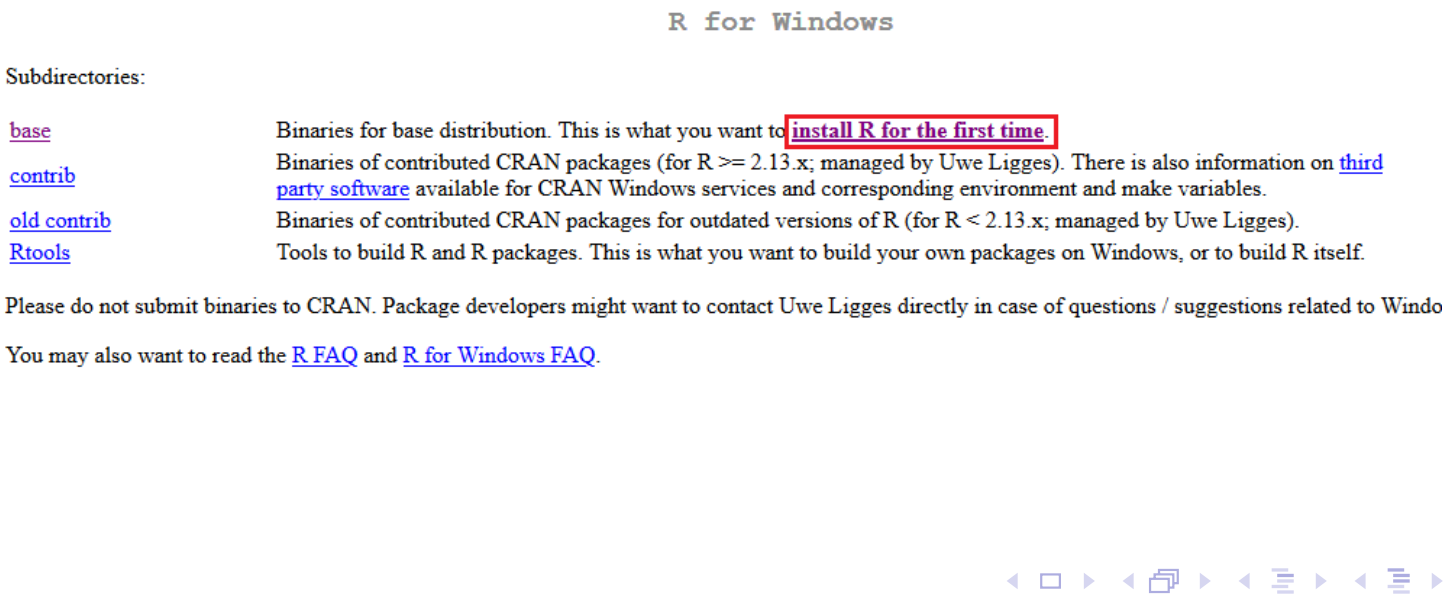
The Comprehensive R Archive Network

Download and Install R

Precompiled binary distributions of the base system and contributed packages, **Windows and Mac** users most likely want one of these versions of R:

- Download R for Linux
- Download R for (Mac) OS X
- Download R for Windows

R is part of many Linux distributions, you should check with your Linux package management system in addition to the link above.



R for Windows

Subdirectories:

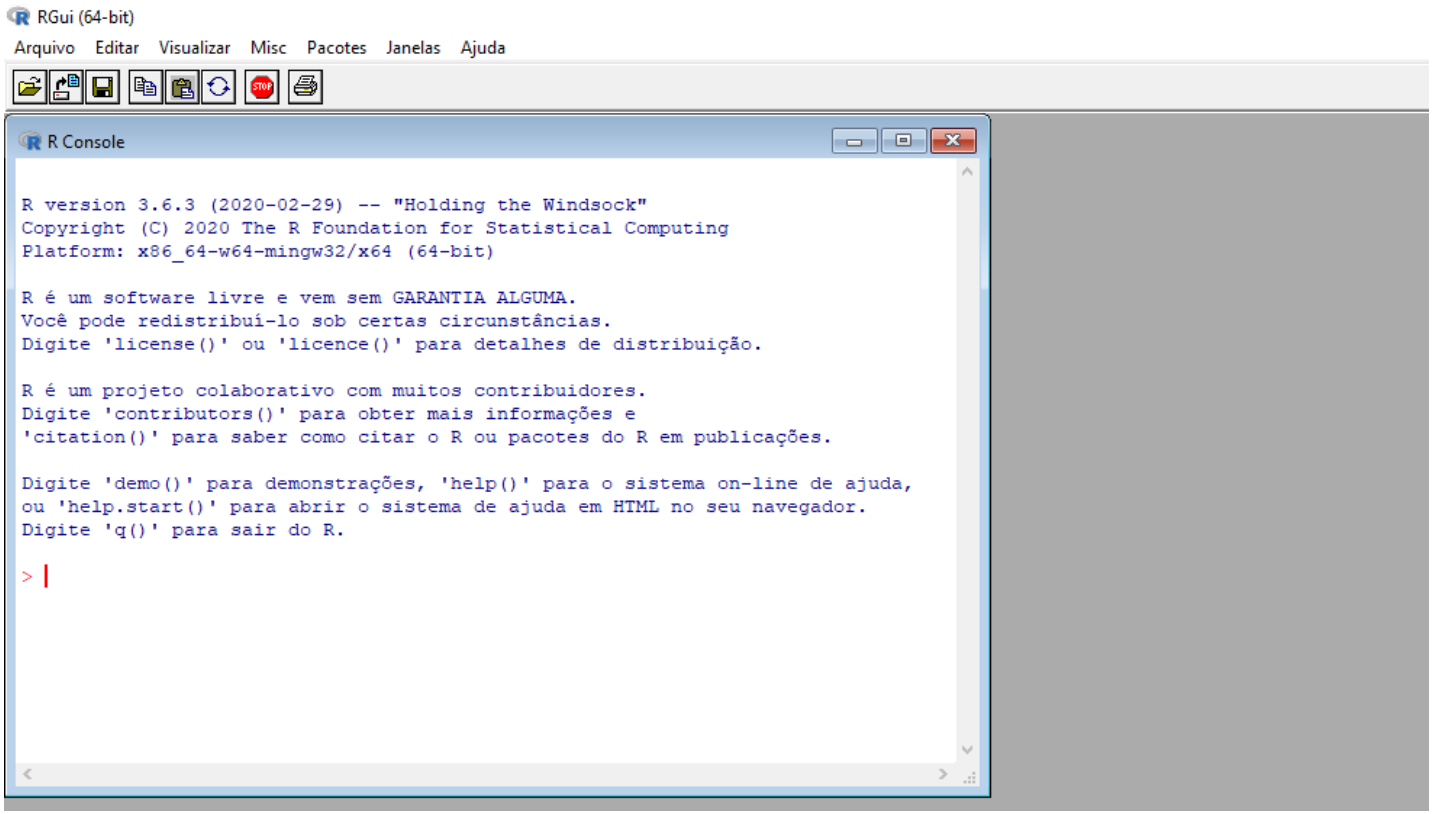
| | |
|---|---|
| base | Binaries for base distribution. This is what you want to install R for the first time. |
| contrib | Binaries of contributed CRAN packages (for R >= 2.13.x; managed by Uwe Ligges). There is also information on third party software available for CRAN Windows services and corresponding environment and make variables. |
| old contrib | Binaries of contributed CRAN packages for outdated versions of R (for R < 2.13.x; managed by Uwe Ligges). |
| Rtools | Tools to build R and R packages. This is what you want to build your own packages on Windows, or to build R itself. |

Please do not submit binaries to CRAN. Package developers might want to contact Uwe Ligges directly in case of questions / suggestions related to Windo

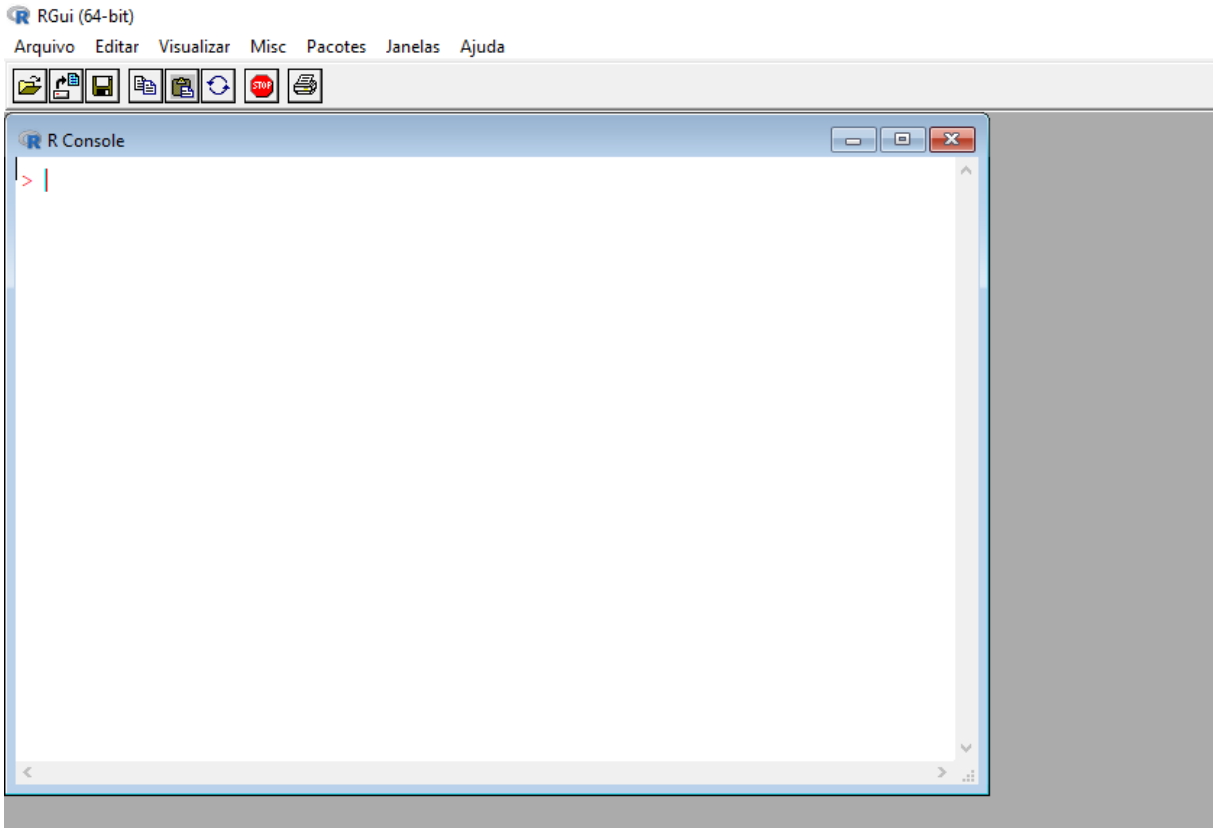
You may also want to read the R FAQ and R for Windows FAQ.

# Operações Básicas no R

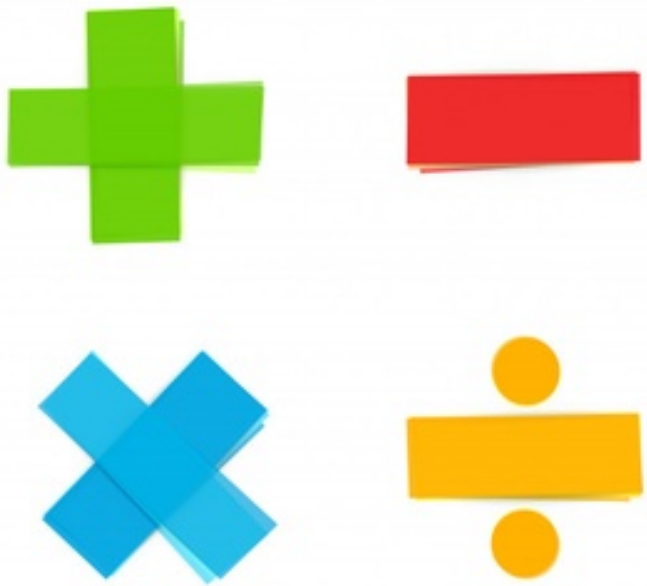
## Tela Inicial do R.



Iniciamos com um "Ctrl + l"para limpar a tela.

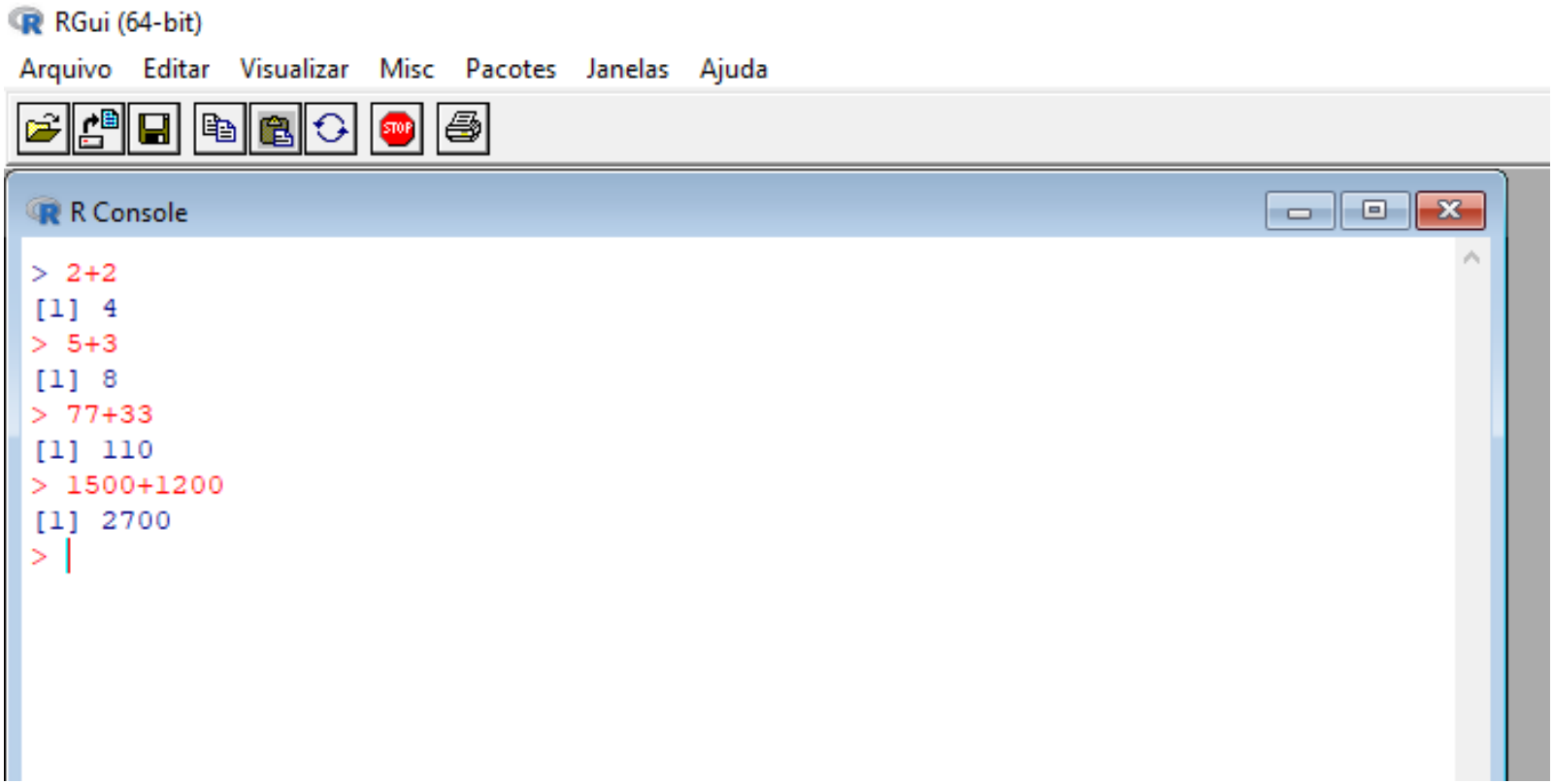


# Vamos começar!

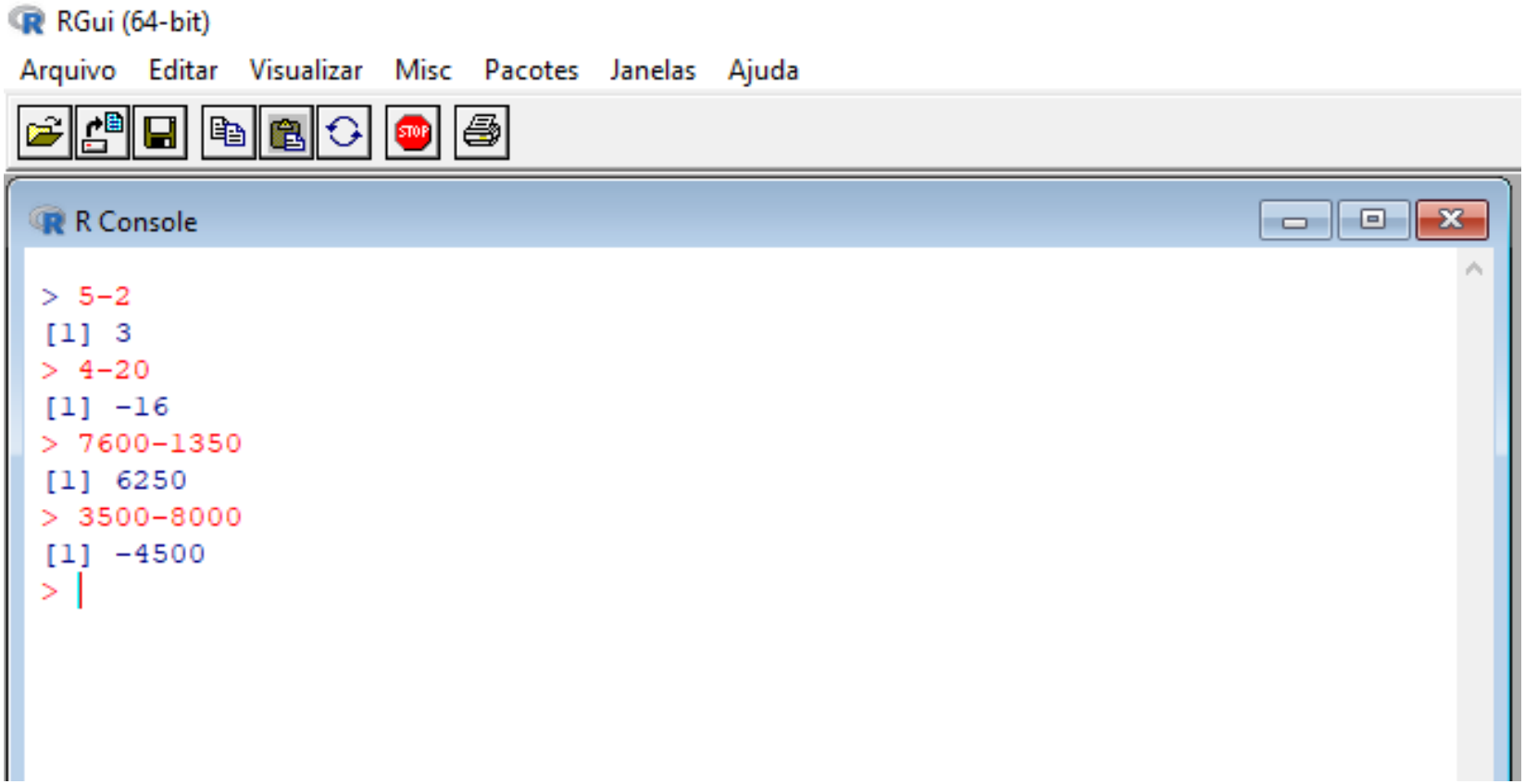


# Adição

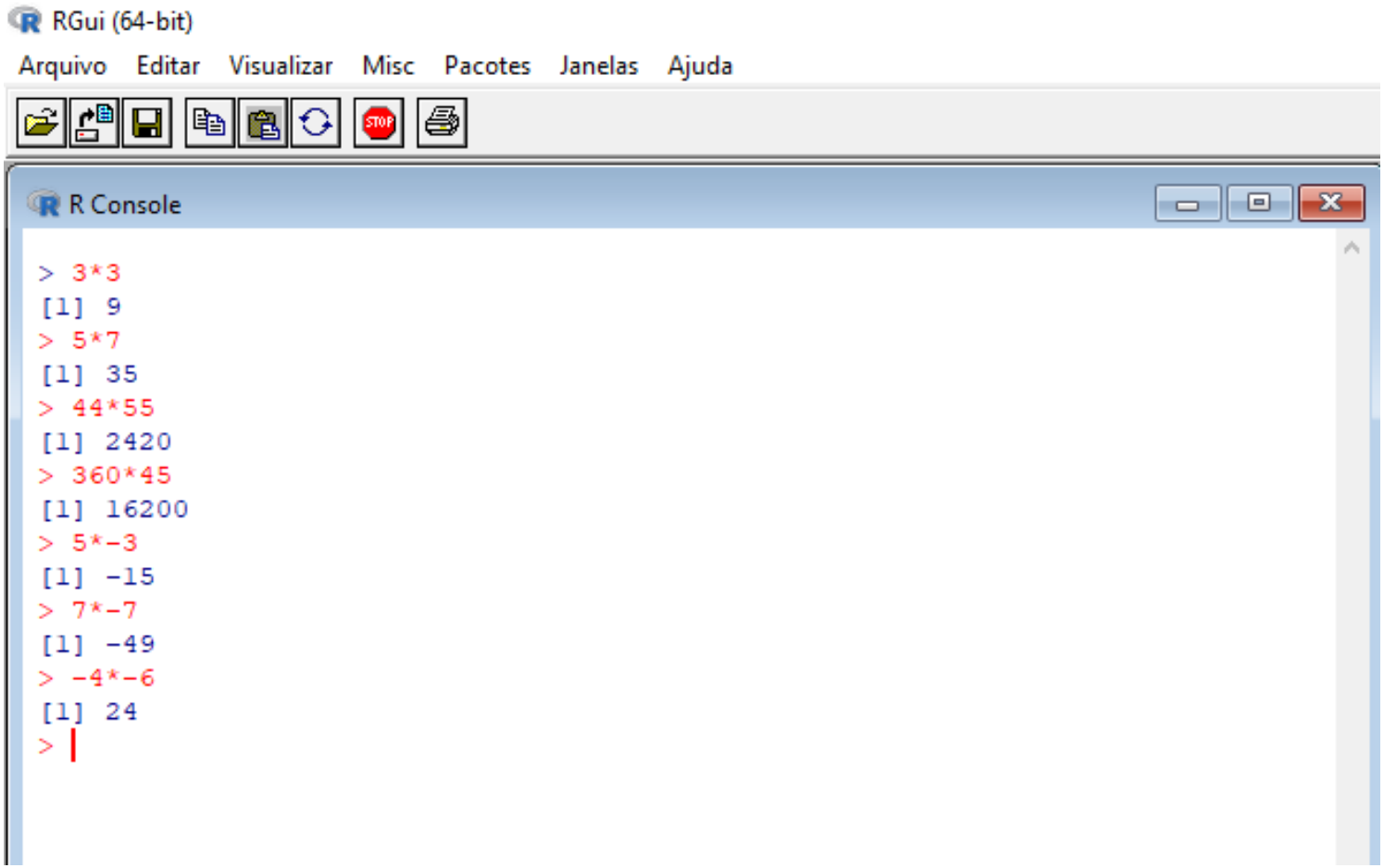
Começando com algumas adições simples.



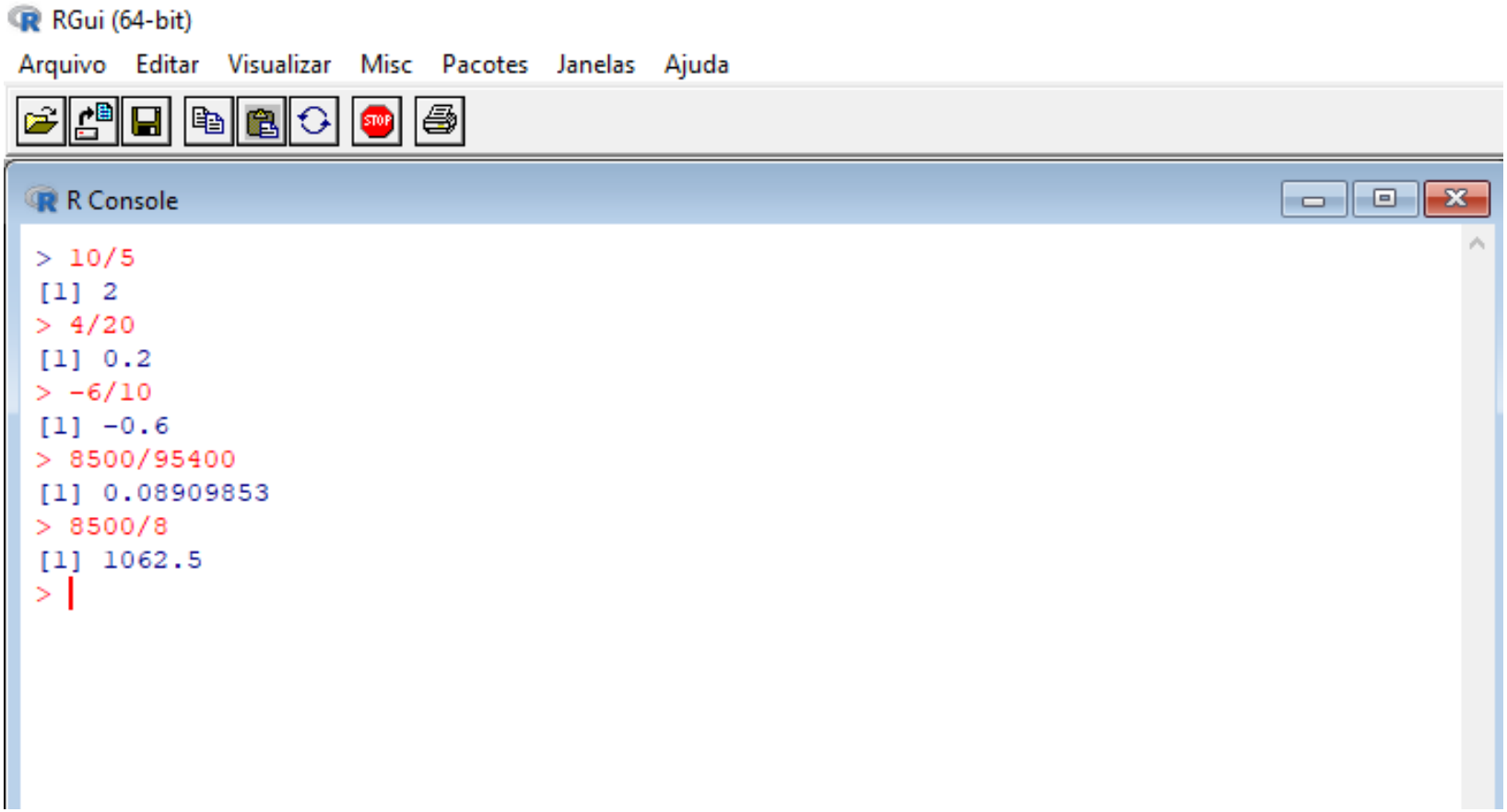
# Subtração


RGui (64-bit)
Arquivo Editar Visualizar Misc Pacotes Janelas Ajuda
R Console
> 5-2
[1] 3
> 4-20
[1] -16
> 7600-1350
[1] 6250
> 3500-8000
[1] -4500
>

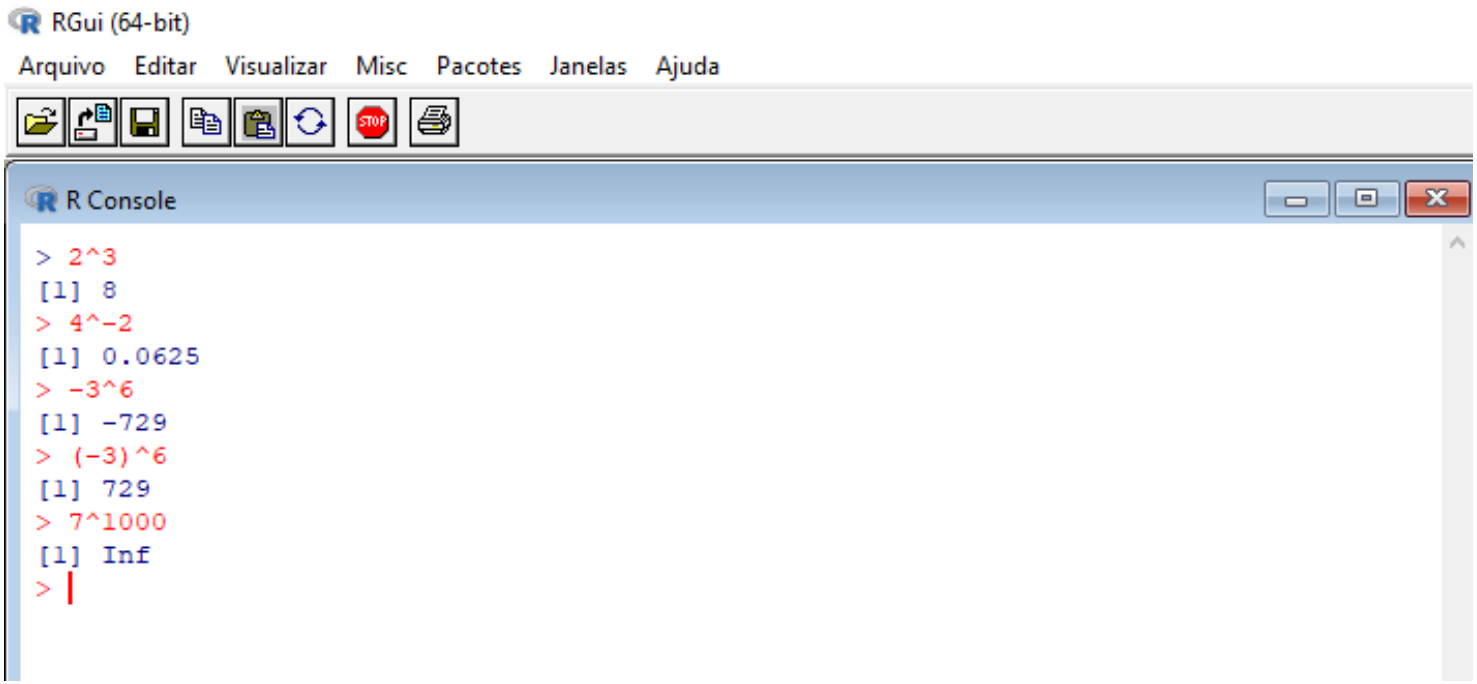
# Multiplicação



# Divisão


RGui (64-bit)
Arquivo Editar Visualizar Misc Pacotes Janelas Ajuda
R Console
> 10/5
[1] 2
> 4/20
[1] 0.2
> -6/10
[1] -0.6
> 8500/95400
[1] 0.08909853
> 8500/8
[1] 1062.5
>

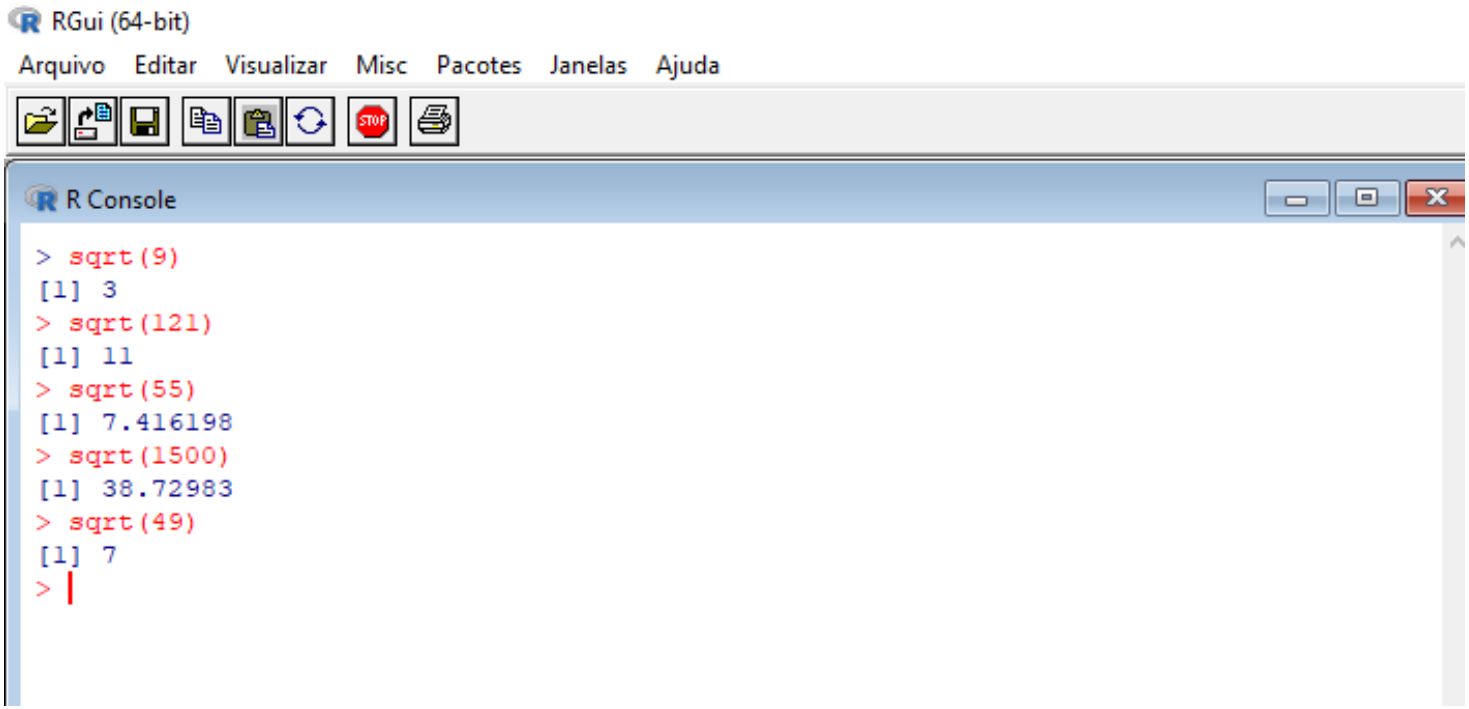
# Potenciação




Observe que elevando um número a uma potência muito alta o R responde com "Inf"que é equivalente a infinito.

# Raíz Quadrada

Para calcular raíz quadrada é preciso escrever "sqrt"e entre parênteses colocar o número que deseja calcular



# Matriz no R

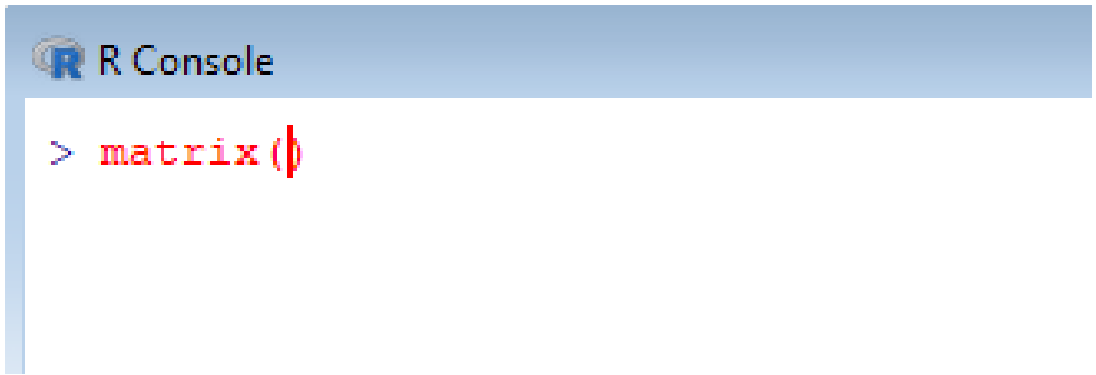
Como escrever essa Matriz no R?

$$A = \begin{bmatrix} 2 & 3 & 1 \\ 0 & 4 & 6 \\ 0 & 5 & 0 \end{bmatrix}$$

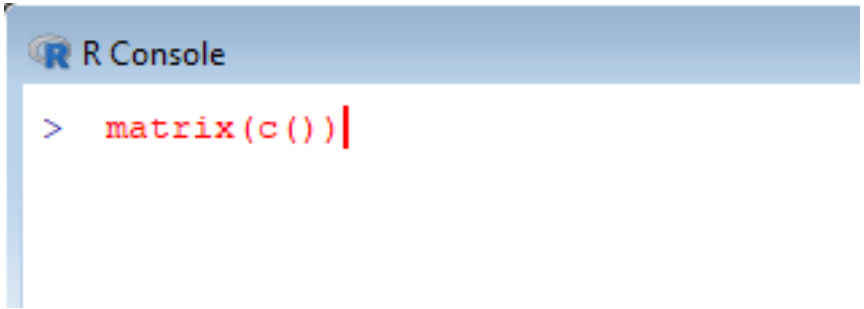
O processo é um pouco mais complexo do que as operações vistas anteriormente.

Vamos criar a Matriz A.

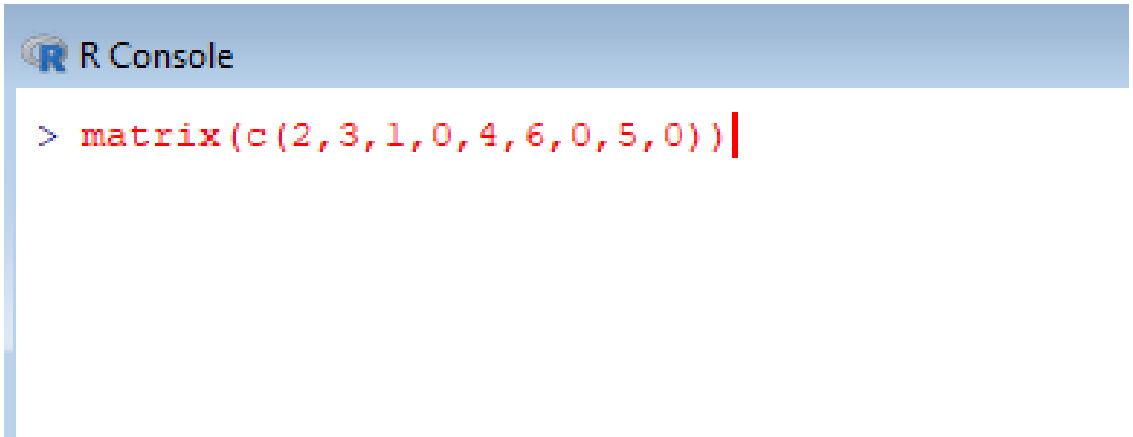
- Primeiro escrevemos o comando "matrix"



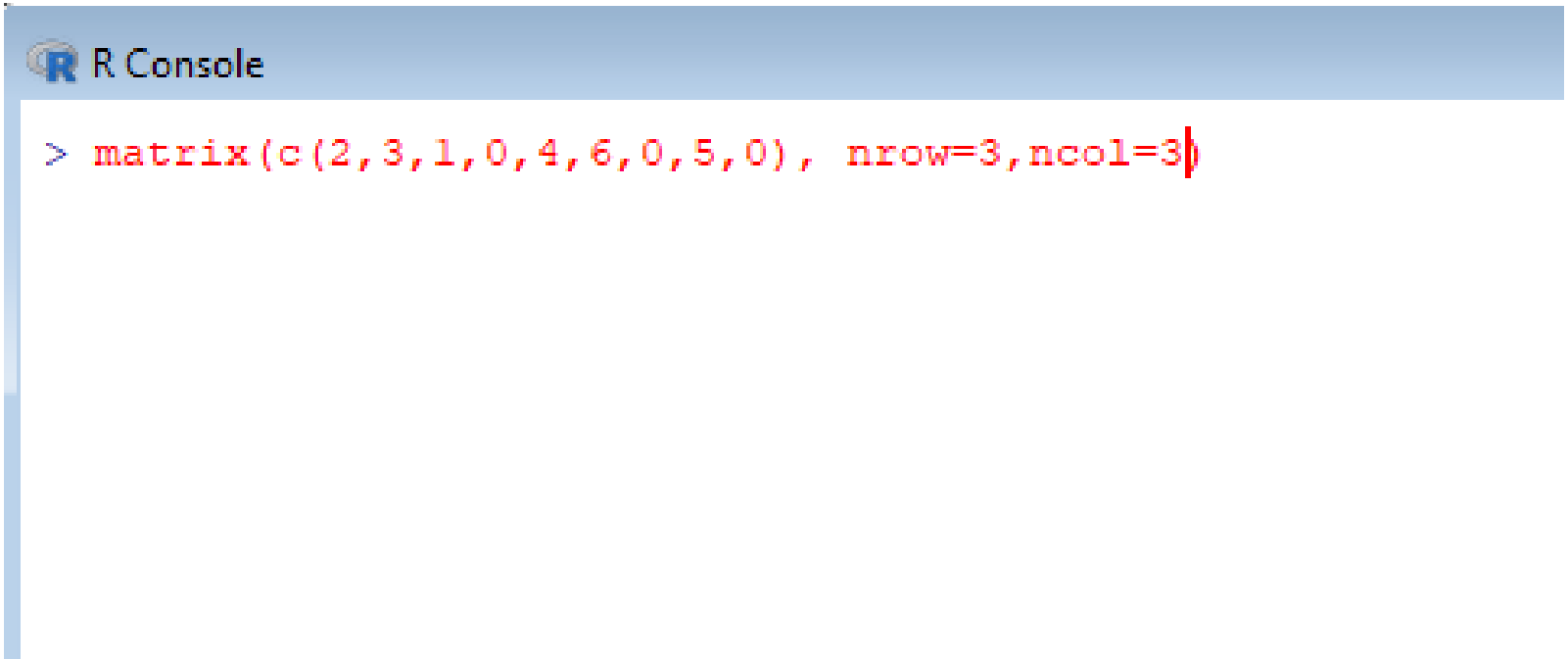
- Dentro dos parênteses colocamos "c( )"que indica um vetor.



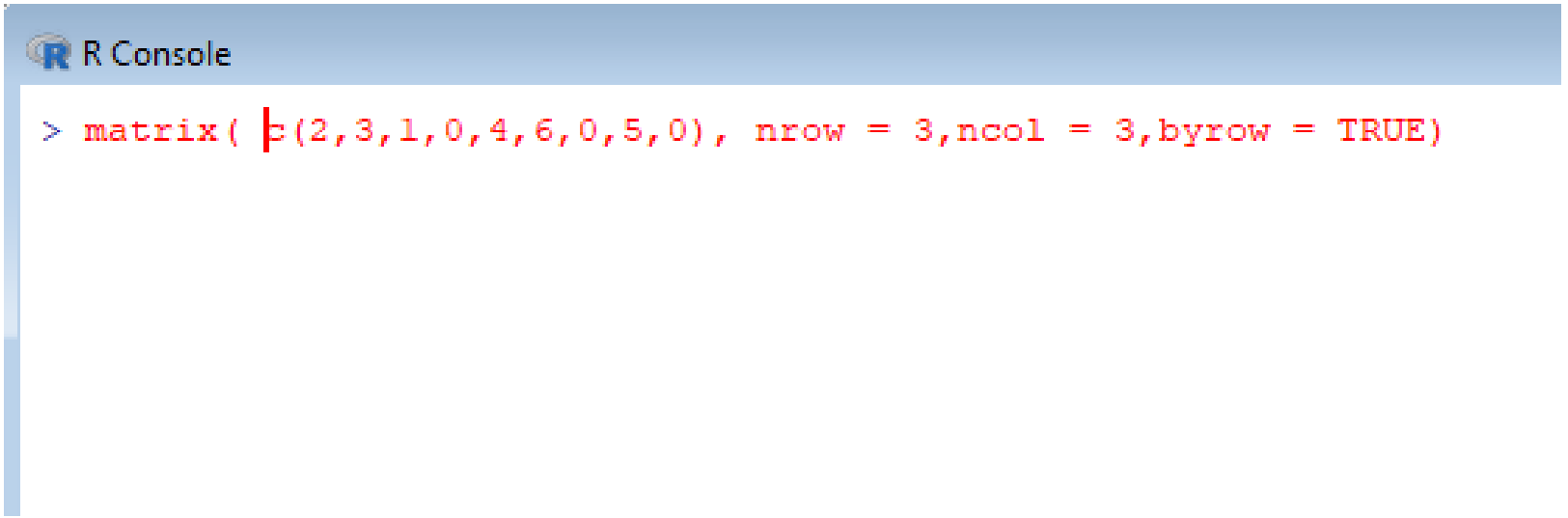

- E dentro dos parênteses desse vetor escrevemos os elementos da matriz



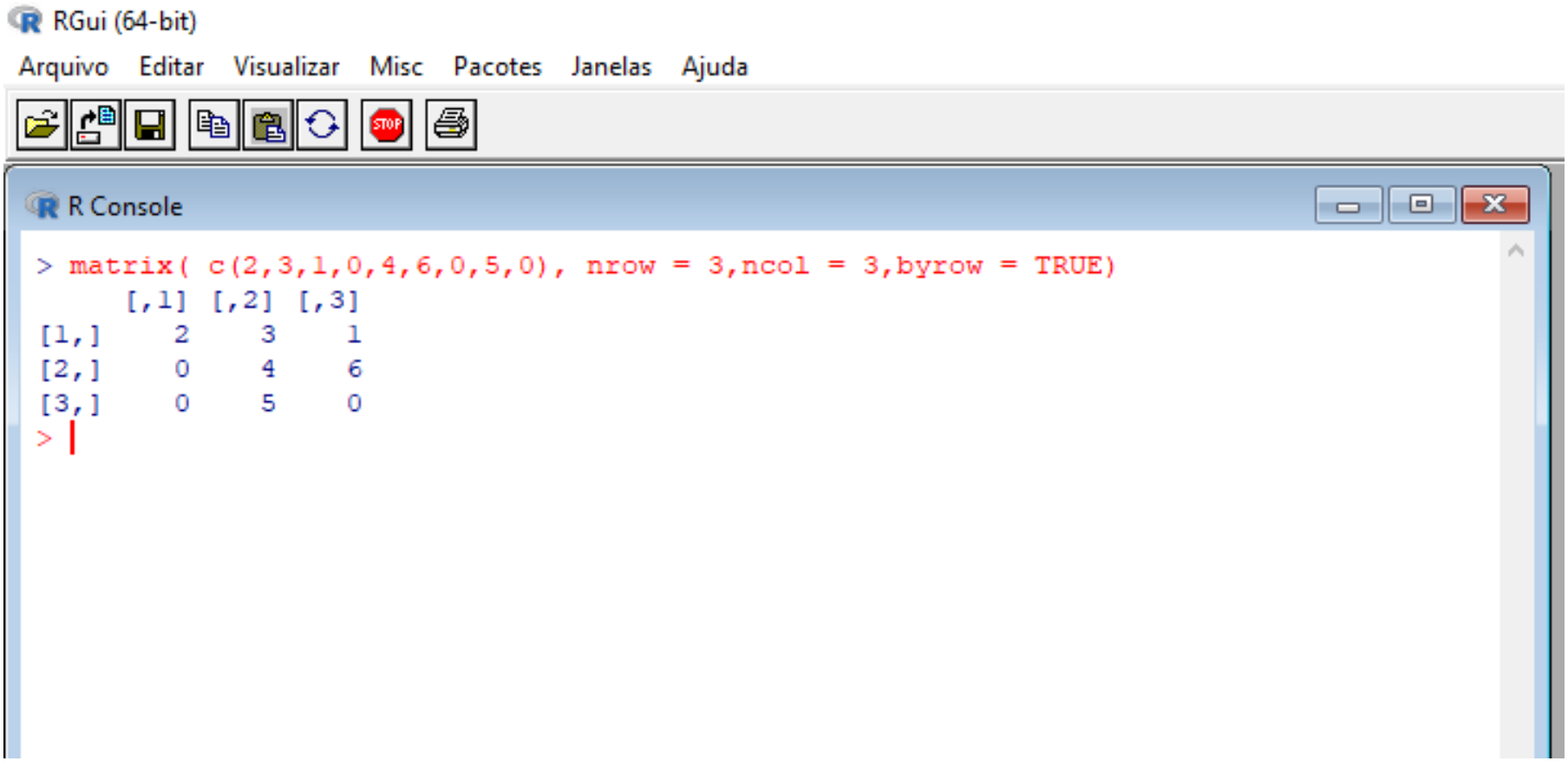
- Depois determinamos o número de linhas e colunas da Matriz, usando "nrol"e "ncol".



- Por fim, colocamos "byrow= TRUE"para indicar que a matriz vai ser escrita na ordem em que está o vetor.



# E a Matriz está pronta.



# Matriz A

Aqui definimos a matriz como "A".