

Actividad | 2 | Método de Gauss-Jordan

o la Regla de Cramer

Matemáticas Matriciales

Ingeniería en Desarrollo de Software



academiglobal

TUTOR: Eduardo Israel Castillo García

ALUMNO: Ana Cristina Perez Canseco

FECHA: 23 de junio de 2024

INDICE

Desarrollo	1
Referencias	9

Desarrollo

$$230x + 100y = 3589$$

$$3x + 5y = 160$$

$$\begin{bmatrix} 230 & 100 \\ 3 & 5 \end{bmatrix} = \begin{bmatrix} 230(5) - 100(3) \end{bmatrix} = \begin{bmatrix} 1150 - 300 \end{bmatrix} = 850$$

$$\begin{bmatrix} 230 & 100 \\ 3 & 5 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 3589 \\ 160 \end{bmatrix}$$

$$x = \frac{\begin{bmatrix} 3589 & 100 \\ 160 & 5 \end{bmatrix}}{\begin{bmatrix} 230 & 100 \\ 3 & 5 \end{bmatrix}} = \frac{3589(5) - 160(100)}{850} = \frac{17945 - 16000}{850} = 1945$$

Determinante

$$x = \frac{\begin{bmatrix} 3589 & 100 \\ 160 & 5 \end{bmatrix}}{|A|} = \frac{1945}{850} = 2.28 \quad x = 2 \text{ expertos}$$

$$y = \frac{\begin{bmatrix} 230 & 3589 \\ 3 & 160 \end{bmatrix}}{\begin{bmatrix} 230 & 100 \\ 3 & 5 \end{bmatrix}} = \frac{230(160) - 3589(3)}{850} = \frac{36800 - 10767}{850} = 26.33$$

Determinante

$$y = \frac{\begin{bmatrix} 230 & 3589 \\ 3 & 160 \end{bmatrix}}{|A|} = \frac{26.33}{850} = 30.62 \quad y = 31 \text{ Navotas}$$

Costo total del proyecto

$$2(900)(3) = 5400 \times 1 \text{ día} \quad 62000 + 5400 = 67400$$

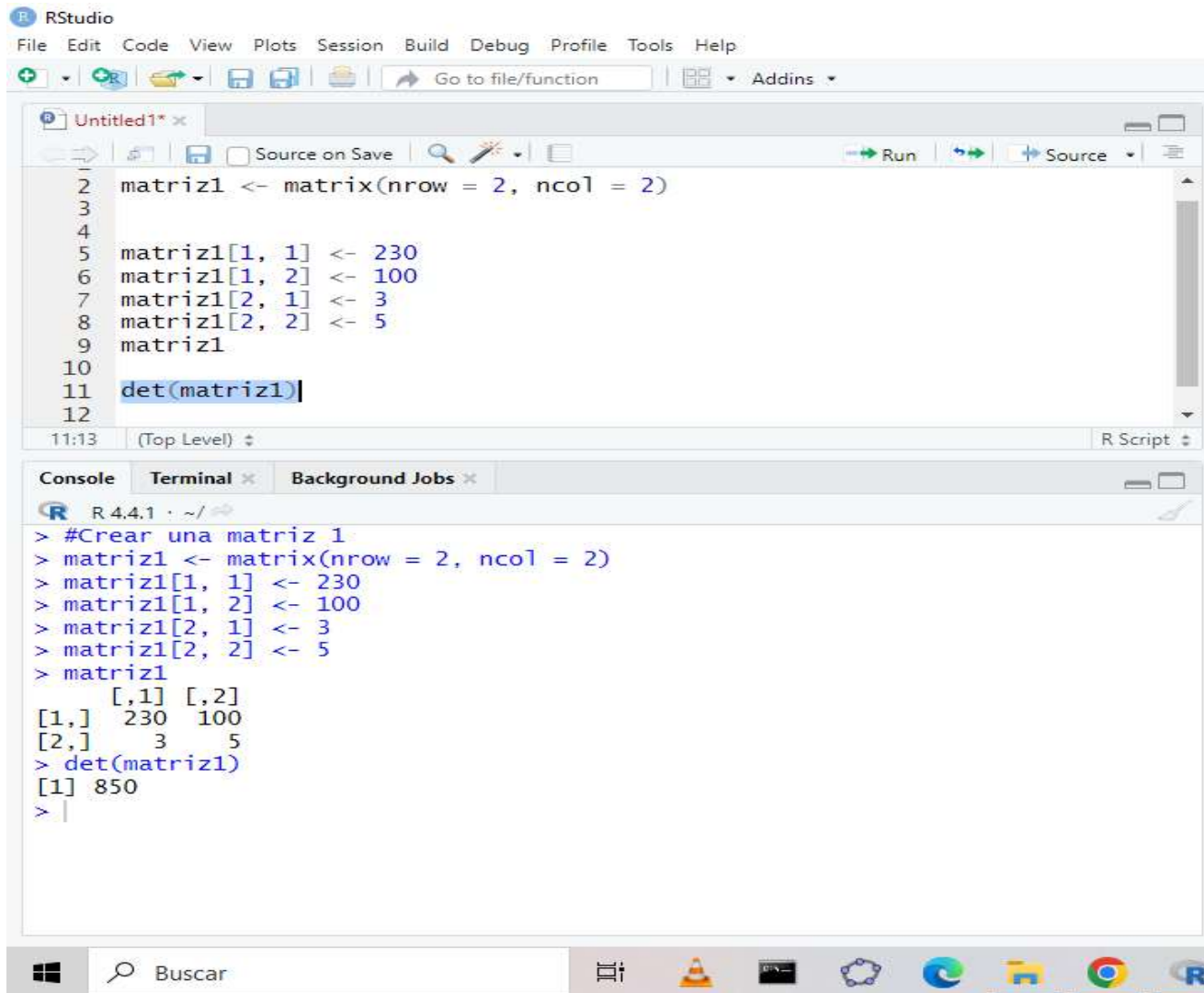
$$31(400)(3) = 62000 \times 1 \text{ día} \quad 67400(20) = 1,348,000$$

Representación de sistema de ecuaciones:

$$230x + 100y = 3589$$

$$3x + 5y = 160$$

Creación de matriz con sistema de ecuaciones y su determinante



The screenshot shows the RStudio interface. The script editor contains the following R code:

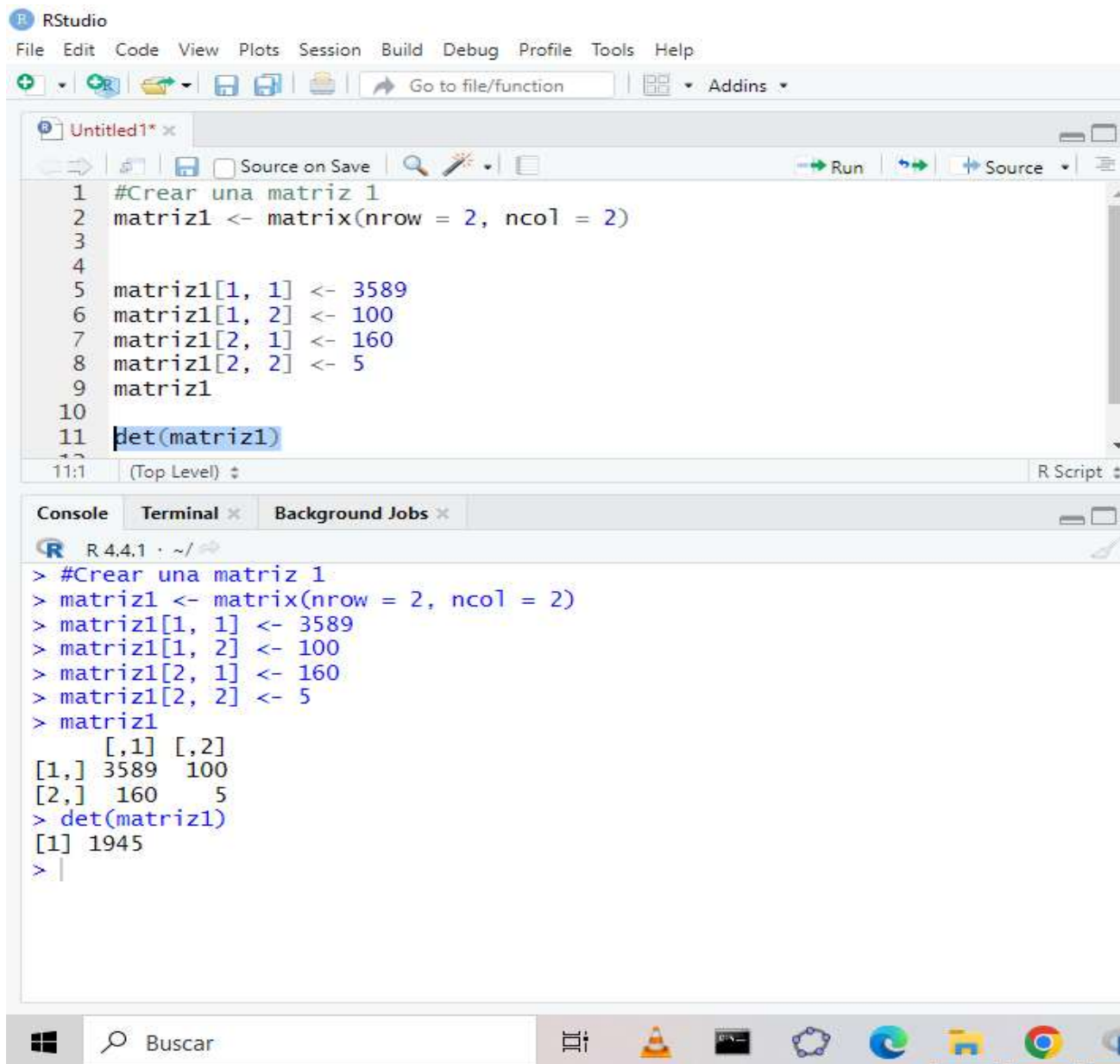
```
2 matriz1 <- matrix(nrow = 2, ncol = 2)
3
4
5 matriz1[1, 1] <- 230
6 matriz1[1, 2] <- 100
7 matriz1[2, 1] <- 3
8 matriz1[2, 2] <- 5
9 matriz1
10
11 det(matriz1)
12
```

The console output shows the execution of the code:

```
> #Crear una matriz 1
> matriz1 <- matrix(nrow = 2, ncol = 2)
> matriz1[1, 1] <- 230
> matriz1[1, 2] <- 100
> matriz1[2, 1] <- 3
> matriz1[2, 2] <- 5
> matriz1
      [,1] [,2]
[1,] 230  100
[2,]   3    5
> det(matriz1)
[1] 850
>
```

The taskbar at the bottom shows the Windows Start button, a search bar with the text "Buscar", and several application icons including VLC, a terminal, and web browsers like Edge and Chrome.

Calcula X sustituyendo los valores de la columna 1 de la matriz original con los términos constante y calcular la determinante



The screenshot shows the RStudio interface. The script editor contains the following R code:

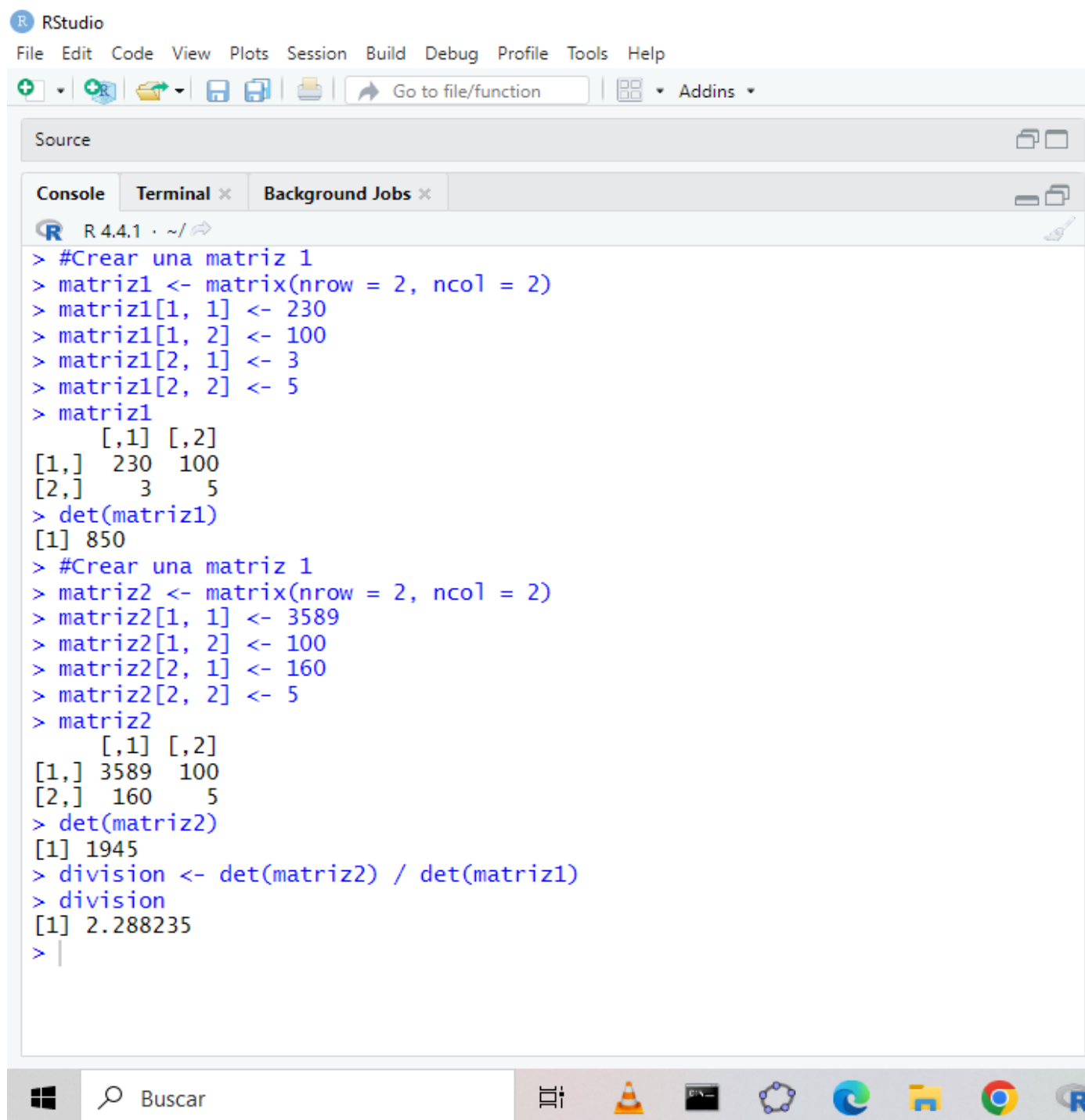
```
1 #Crear una matriz 1
2 matriz1 <- matrix(nrow = 2, ncol = 2)
3
4
5 matriz1[1, 1] <- 3589
6 matriz1[1, 2] <- 100
7 matriz1[2, 1] <- 160
8 matriz1[2, 2] <- 5
9 matriz1
10
11 det(matriz1)
```

The console output shows the execution of the code:

```
> #Crear una matriz 1
> matriz1 <- matrix(nrow = 2, ncol = 2)
> matriz1[1, 1] <- 3589
> matriz1[1, 2] <- 100
> matriz1[2, 1] <- 160
> matriz1[2, 2] <- 5
> matriz1
      [,1] [,2]
[1,] 3589 100
[2,] 160   5
> det(matriz1)
[1] 1945
> |
```

The Windows taskbar at the bottom shows the search bar with the text "Buscar" and several application icons including VLC, a terminal, and web browsers.

Resultado del cálculo de $X=2.28$

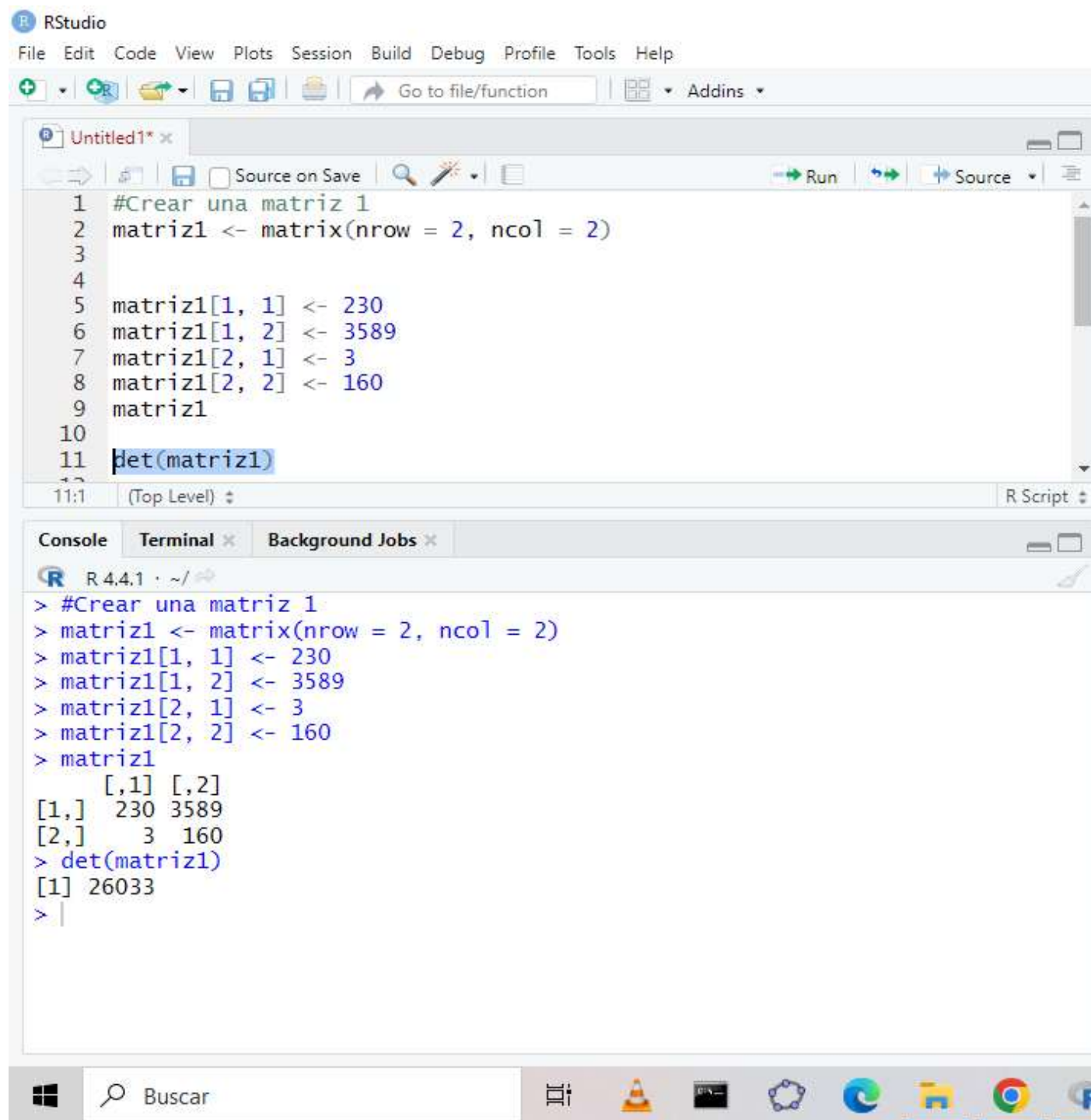


The screenshot shows the RStudio interface with the console window active. The console displays the following R code and its output:

```
> #Crear una matriz 1
> matriz1 <- matrix(nrow = 2, ncol = 2)
> matriz1[1, 1] <- 230
> matriz1[1, 2] <- 100
> matriz1[2, 1] <- 3
> matriz1[2, 2] <- 5
> matriz1
      [,1] [,2]
[1,] 230 100
[2,]   3   5
> det(matriz1)
[1] 850
> #Crear una matriz 2
> matriz2 <- matrix(nrow = 2, ncol = 2)
> matriz2[1, 1] <- 3589
> matriz2[1, 2] <- 100
> matriz2[2, 1] <- 160
> matriz2[2, 2] <- 5
> matriz2
      [,1] [,2]
[1,] 3589 100
[2,]  160   5
> det(matriz2)
[1] 1945
> division <- det(matriz2) / det(matriz1)
> division
[1] 2.288235
> |
```

The RStudio window title is "RStudio". The menu bar includes File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, and Help. The toolbar shows icons for creating a new file, opening a file, saving, printing, and navigating to a file/function. The console window has tabs for Console, Terminal, and Background Jobs. The status bar at the bottom shows the Windows taskbar with the search bar and several application icons.

Calcular Y sustituyendo los valores de la columna 2 de la matriz original con los términos constantes y calcular la determinante.



The screenshot displays the RStudio interface. The script editor shows the following R code:

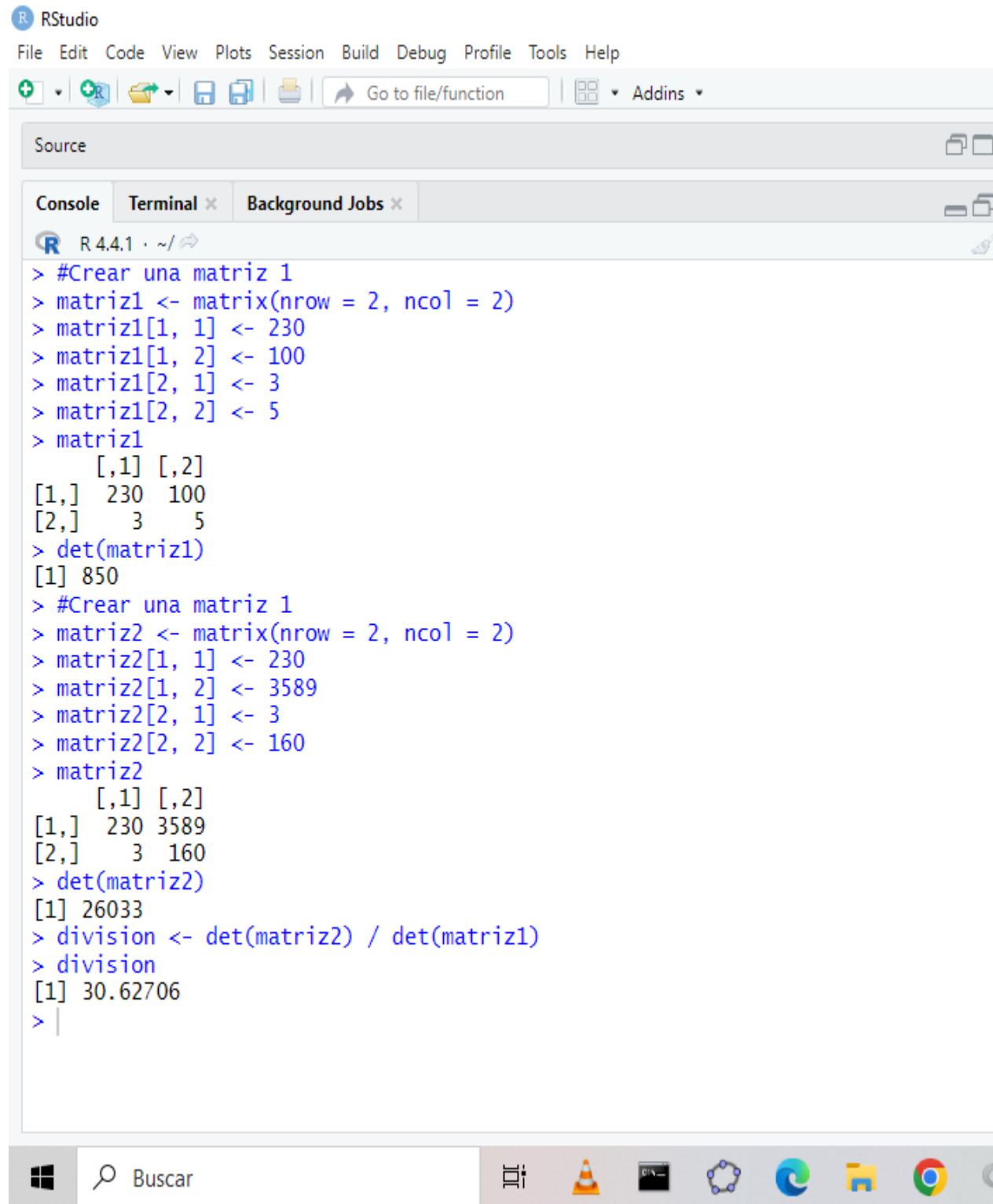
```
1 #Crear una matriz 1
2 matriz1 <- matrix(nrow = 2, ncol = 2)
3
4
5 matriz1[1, 1] <- 230
6 matriz1[1, 2] <- 3589
7 matriz1[2, 1] <- 3
8 matriz1[2, 2] <- 160
9 matriz1
10
11 det(matriz1)
```

The console output shows the execution of the code:

```
> #Crear una matriz 1
> matriz1 <- matrix(nrow = 2, ncol = 2)
> matriz1[1, 1] <- 230
> matriz1[1, 2] <- 3589
> matriz1[2, 1] <- 3
> matriz1[2, 2] <- 160
> matriz1
      [,1] [,2]
[1,] 230 3589
[2,]   3  160
> det(matriz1)
[1] 26033
> |
```

The task involves calculating the determinant of a 2x2 matrix by substituting constant terms for the values in the second column of the original matrix. The RStudio interface shows the code for creating the matrix and calculating its determinant, with the console output confirming the result.

Resultado de $Y=30.62$

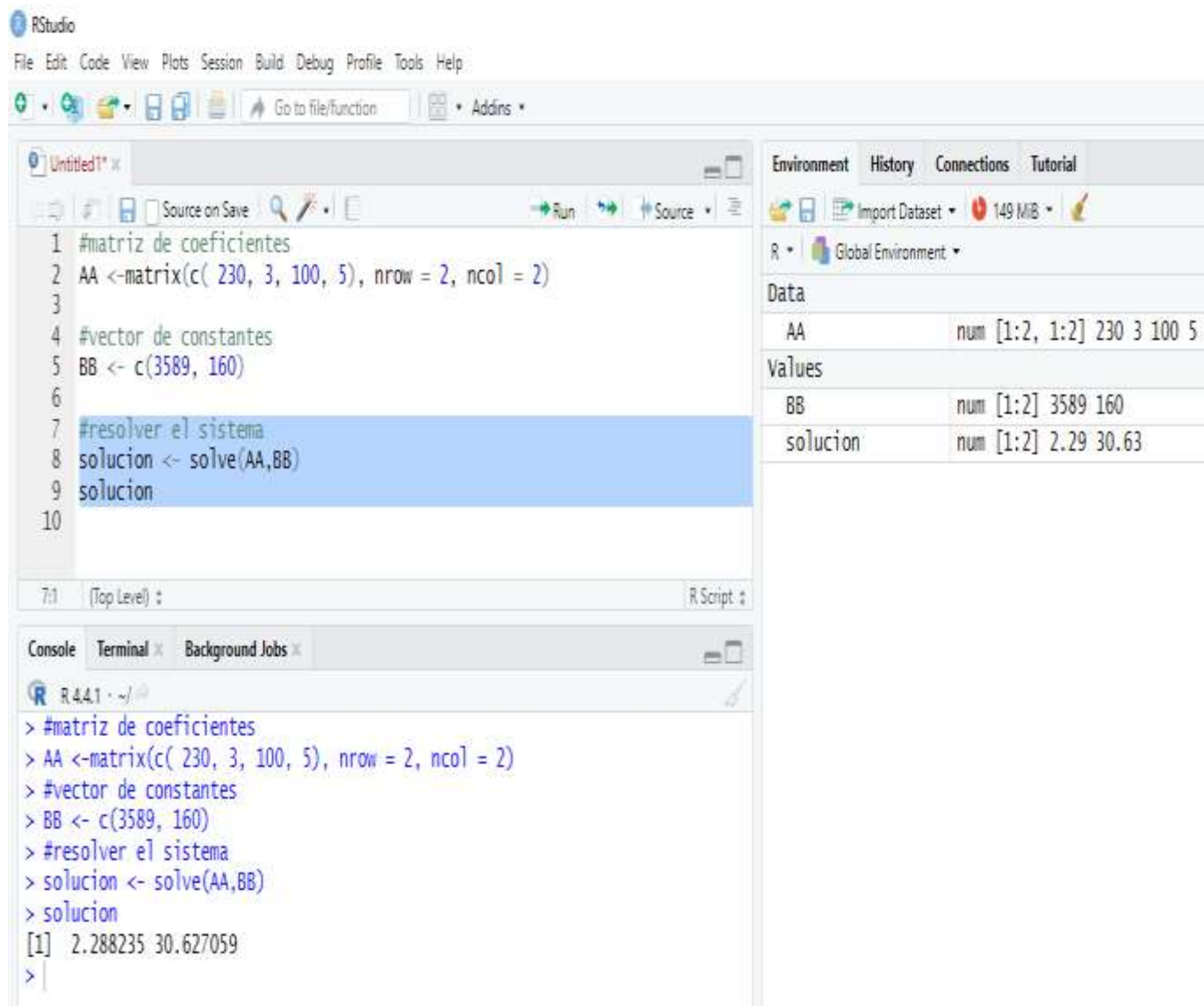


The screenshot shows the RStudio interface with the console pane active. The console displays the following R code and its output:

```
> #Crear una matriz 1
> matriz1 <- matrix(nrow = 2, ncol = 2)
> matriz1[1, 1] <- 230
> matriz1[1, 2] <- 100
> matriz1[2, 1] <- 3
> matriz1[2, 2] <- 5
> matriz1
      [,1] [,2]
[1,] 230 100
[2,]   3   5
> det(matriz1)
[1] 850
> #Crear una matriz 1
> matriz2 <- matrix(nrow = 2, ncol = 2)
> matriz2[1, 1] <- 230
> matriz2[1, 2] <- 3589
> matriz2[2, 1] <- 3
> matriz2[2, 2] <- 160
> matriz2
      [,1] [,2]
[1,] 230 3589
[2,]   3  160
> det(matriz2)
[1] 26033
> division <- det(matriz2) / det(matriz1)
> division
[1] 30.62706
> |
```

The RStudio window title is "RStudio". The menu bar includes File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, and Help. The toolbar shows icons for file operations and a search bar labeled "Go to file/function". The console pane has tabs for Console, Terminal, and Background Jobs. The status bar at the bottom shows the Windows taskbar with a search bar labeled "Buscar" and several application icons.

Solución de la matriz de ecuaciones y comprobación de resultados $X=2$ $Y=31$



The screenshot displays the RStudio interface with the following components:

- Source Editor:** Contains the R script for solving the system of equations.


```

1 #matriz de coeficientes
2 AA <- matrix(c( 230, 3, 100, 5), nrow = 2, ncol = 2)
3
4 #vector de constantes
5 BB <- c(3589, 160)
6
7 #resolver el sistema
8 solucion <- solve(AA,BB)
9 solucion
10

```
- Environment Pane:** Shows the objects created in the Global Environment.

Data	
AA	num [1:2, 1:2] 230 3 100 5
Values	
BB	num [1:2] 3589 160
solucion	num [1:2] 2.29 30.63
- Console:** Shows the execution of the script.


```

> #matriz de coeficientes
> AA <- matrix(c( 230, 3, 100, 5), nrow = 2, ncol = 2)
> #vector de constantes
> BB <- c(3589, 160)
> #resolver el sistema
> solucion <- solve(AA,BB)
> solucion
[1] 2.288235 30.627059
>

```

Costo total de mano de obra de proyecto

X (900) (3) = 5400 por 1 día de un desarrollador experto

2 (900) (3) = 5400

Y (400) (5) = 62000 por día de un desarrollador novato

31 (400) (5) = 62000

$62000 + 5400 = 7400$

$67,400(20) = 1348000$

El costo total del proyecto a realizar vendría siendo de \$1,348,000

Referencias

academiaglobal. (s.f.). Obtenido de [https://academiaglobal-mx.zoom.us/rec/play/K7wAKL_6ELtOKK7JA8G6b35WFLVpC1Dig4ijuP3mdAjvfyIst1bqd5akFTEBprJzScLKB SBbyxGPnuij.kTjgVsnggUimijFU?canPlayFromShare=true&from=share_recording_detail&continueMode=true&componentName=rec-play&originRequestUrl=https%](https://academiaglobal-mx.zoom.us/rec/play/K7wAKL_6ELtOKK7JA8G6b35WFLVpC1Dig4ijuP3mdAjvfyIst1bqd5akFTEBprJzScLKB SBbyxGPnuij.kTjgVsnggUimijFU?canPlayFromShare=true&from=share_recording_detail&continueMode=true&componentName=rec-play&originRequestUrl=https%3A%2F%2Fwww.youtube.com%2Fembed%2FK7wAKL_6ELtOKK7JA8G6b35WFLVpC1Dig4ijuP3mdAjvfyIst1bqd5akFTEBprJzScLKB_SBbyxGPnuij.kTjgVsnggUimijFU?si=ytc0933333333333)