

Moreno Puente Emilia Cristina Taller Gauss

Eliminación Gaussiana con sustitución hacia atrás

1. El bug encontrado en el código es que el algoritmo de eliminación_gaussiana opera con floats entonces se corrigió que el primer término se envie con . dado que int 1 = float 1.0

2. Complejidad Gauss y Gauss-Jordan

Sumas y Restas

```
In [13]: import numpy as np
import matplotlib.pyplot as plt

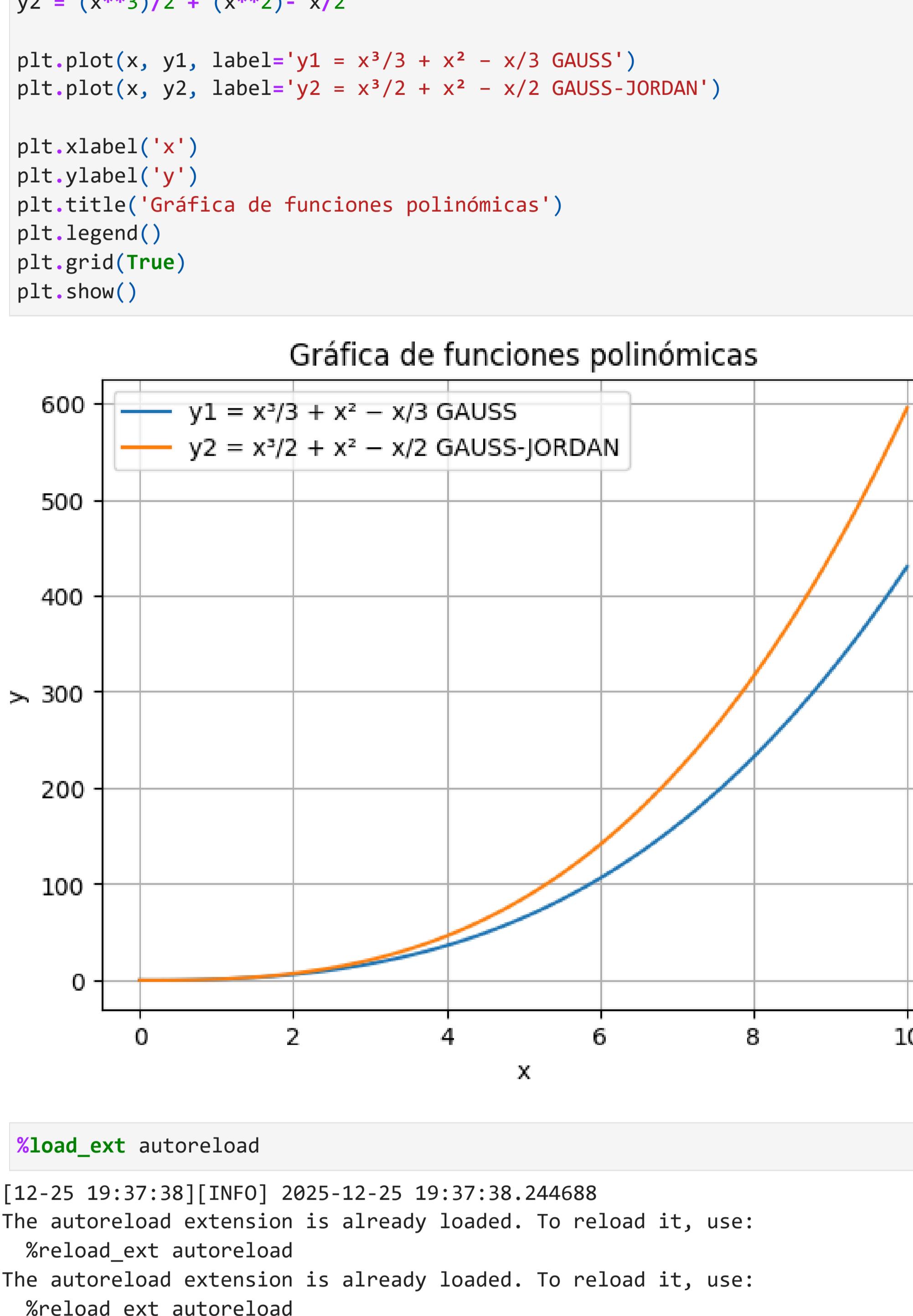
x = np.linspace(0, 10, 100)

y1 = (x**3)/3 + (x**2)/2 - (5*x)/6
y2 = (x**3)/2 + x/2

plt.plot(x, y1, label='y1 = x^3/3 + x^2/2 - 5x/6')
plt.plot(x, y2, label='y2 = x^3/2 + x/2')

plt.xlabel('x')
plt.ylabel('y')
plt.title('Gráfica de funciones polinómicas')
plt.legend()
plt.grid(True)
plt.show()
```

Gráfica de funciones polinómicas



Divisiones y Multiplicaciones

```
In [15]: import numpy as np
import matplotlib.pyplot as plt

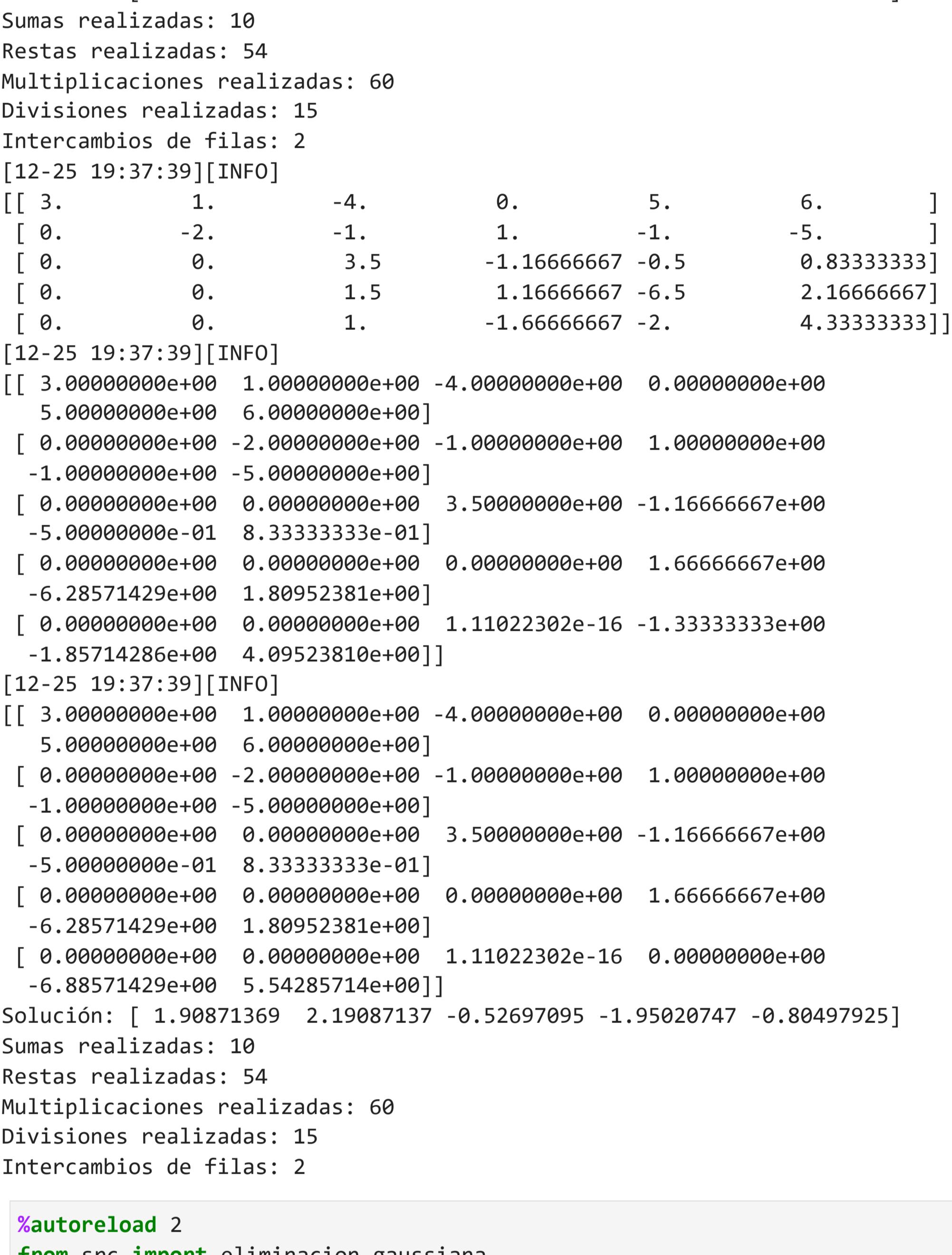
x = np.linspace(0, 10, 100)

y1 = (x**3)/3 + (x**2) - (x)/3
y2 = (x**3)/2 + (x**2) - x/2

plt.plot(x, y1, label='y1 = x^3/3 + x^2 - x/3 GAUSS')
plt.plot(x, y2, label='y2 = x^3/2 + x^2 - x/2 GAUSS-JORDAN')

plt.xlabel('x')
plt.ylabel('y')
plt.title('Gráfica de funciones polinómicas')
plt.legend()
plt.grid(True)
plt.show()
```

Gráfica de funciones polinómicas



```
In [3]: %load_ext autoreload
```

```
[12-25 19:37:38][INFO] 2025-12-25 19:37:38.244688
The autoreload extension is already loaded. To reload it, use:
%reload_ext autoreload
The autoreload extension is already loaded. To reload it, use:
%reload_ext autoreload
```

```
In [4]: %autoreload 2
from src import eliminacion_gaussiana
```

```
Ab = [[2, 1, -1, 1, -3, 7], [1, 0, 2, -1, 1, 2], [0, -2, -1, 1, -1, -5], [3, 1, -4, 0, 5, 6], [1, -1, -1, -1, -1, 3]]
```

```
sol, suma_count, resta_count, mult_count, div_count, intercambio_count = eliminacion_gaussiana(Ab)
```

```
print('Solución:', sol)
```

```
print('Sumas realizadas:', suma_count)
```

```
print('Restas realizadas:', resta_count)
```

```
print('Multiplicaciones realizadas:', mult_count)
```

```
print('Divisiones realizadas:', div_count)
```

```
print('Intercambios de filas:', intercambio_count)
```

```
[12-25 19:37:39][INFO]
```

```
[[ 3. 1. -4. 0. 5. 6. ]]
```

```
[ 0. -0.33333333 3.33333333 -1. -0.66666667 0. ]]
```

```
[ 0. -2. -1. 1. -1. -5. ]]
```

```
[ 0. 0. 3.5 -1.16666667 -0.5 0.83333333 ]]
```

```
[ 0. 0. 1.5 1.16666667 -6.5 2.16666667 ]]
```

```
[ 0. 0. 1. -1.66666667 -2. 4.33333333 ]]
```

```
[12-25 19:37:39][INFO]
```

```
[[ 3. 0.000000e+00 1.00000000e+00 -4.00000000e+00 0.00000000e+00
```

```
5.00000000e+00 6.00000000e+00 ]]
```

```
[ 0. 00000000e+00 -2.00000000e+00 -1.00000000e+00 1.00000000e+00
```

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-1.00000000e+00 -5.00000000e+00 ]]
```

```
[ 0. 00000000e+00 0.00000000e+00 3.50000000e+00 -1.16666667e+00
```

```
-5.00000000e+00 -8.33333333e-01 ]]
```

```
[ 0. 00000000e+00 0.00000000e+00 0.00000000e+00 1.66666667e+00
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```
-6.28571429e+00 1.80952381e+00 ]]
```

```
[ 0. 00000000e+00 0.00000000e+00 1.11022302e-16 -1.33333333e+00
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```
-1.85714286e+00 4.09523810e+00 ]]
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```
[12-25 19:37:39][INFO]
```

```
[[ 3. 0.000000e+00 1.00000000e+00 -4.00000000e+00 0.00000000e+00
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5.00000000e+00 6.00000000e+00 ]]
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[ 0. 00000000e+00 -2.00000000e+00 -1.00000000e+00 1.00000000e+00
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-1.00000000e+00 -5.00000000e+00 ]]
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-5.00000000e+00 -8.33333333e-01 ]]
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-6.28571429e+00 1.80952381e+00 ]]
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-1.85714286e+00 4.09523810e+00 ]]
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[12-25 19:46:24][INFO]
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[[ 3. 1. -4. 0. 5. 6. ]]
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[ 0. -0.33333333 3.33333333 -1. -0.66666667 0. ]]
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```
[ 0. -2. -1. 1. -1. -5. ]]
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[ 0. 0. 3.5 -1.16666667 -0.5 0.83333333 ]]
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[ 0. 0. 1.5 1.16666667 -6.5 2.16666667 ]]
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[ 0. 0. 1. -1.66666667 -2. 4.33333333 ]]
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[12-25 19:46:24][INFO]
```

```
[[ 3. 0.000000e+00 1.00000000e+00 -4.00000000e+00 0.00000000e+00
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5.00000000e+00 6.00000000e+00 ]]
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[ 0. 00000000e+00 -2.00000000e+00 -1.00000000e+00 1.00000000e+00
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[12-25 19:46:24][INFO]
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[ 0. -0.33333333 3.33333333 -1. -0.66666667 0. ]]
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[ 0. 0. 1. -1.66666667 -2. 4.33333333 ]]
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[12-25 19:46:24][INFO]
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[[ 3. 0.000000e+00 1.00000000e+00 -4.00000000e+00 0.00000000e+00
```

```
5.00000000e+00 6.00000000e+00 ]]
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```
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-1.00000000e+00 -5.00000000e+00 ]]
```

```
[ 0. 00000000e+00 0.00000000e+00 3.50000000e+00 -1.16666667e+00
```

```
-5.00000000e+00 -8.33333333e-01 ]]
```

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[ 0. 00000000e+00 0.00000000e+00 0.00000000e+00 1.66666667e+00
```

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```

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```

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-1.85714286e+00 4.09523810e+00 ]]
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[ 0. -2. -1. 1. -1. -5. ]]
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[[ 3. 0.000000e+00 1.00000000e+00 -4.00000000e+00 0.00000000e+00
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5.00000000e+00 6.00000000e+00 ]]
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```

```
-1.85714286e+00 4.09523810e+00 ]]
```

```
[12-25 19:46:24][INFO]
```

```
[[ 3. 1. -4. 0. 5. 6. ]]
```

```
[ 0. -0.3
```