

# Ecuaciones Lineales

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## 1 Ecuaciones Lineales

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1.0.2 Graficación Computacional

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1.0.4 Clase del 11 de noviembre de 2024

### 1.1 Ejemplo

```
[4]: import numpy as np
```

```
[5]: A4 = np.matrix([[3,2,-1],[2,-2,4],[-1,0.5,-1]])  
b4 = np.matrix([[1],[-2],[0]])
```

```
[6]: x4 = (A4**-1)*b4  
determinante4 = np.linalg.det(A4)
```

```
[7]: # Mostrar los resultados  
print("Forma matricial A x = b:")  
print("Matriz A:")  
print(A4)  
print("Vector b:")  
print(b4)  
print("\nDeterminante de A:", determinante4)  
print("\nValor de x:")  
print(x4)
```

Forma matricial A x = b:

Matriz A:

```
[[ 3.  2. -1. ]  
 [ 2. -2.  4. ]  
 [-1.  0.5 -1. ]]
```

Vector b:

```
[[ 1]  
 [-2]  
 [ 0]]
```

Determinante de A: -3.00000000000000036

Valor de x:

```
[[ 1.]  
 [-2.]  
 [-2.]]
```

## 1.2 Actividad

### 1.2.1 1. $A = (9)$

```
[8]: A = np.matrix([[9]])  
  
print("this is A\n",A)  
det = np.linalg.det(A)  
print("this is the determinante\n",det)
```

```
this is A  
[[9]]  
this is the determinante  
9.0000000000000002
```

### 1.2.2 2. $B = \begin{pmatrix} 4 & -1 \\ -2 & 0 \end{pmatrix}$

```
[9]: A = np.matrix([[4, -1], [-2, 0]])  
  
print("this is A\n",A)  
det = np.linalg.det(A)  
print("this is the determinante\n",det)
```

```
this is A  
[[ 4 -1]  
 [-2  0]]  
this is the determinante  
-2.0
```

### 1.2.3 2. $C = \begin{pmatrix} 5 & 0 & 2 \\ 3 & 1 & 1 \\ 0 & 1 & 2 \end{pmatrix}$

```
[10]: A = np.matrix([[5, 0, 0], [3, 1, 1], [0, 1, 2]])  
  
print("this is A\n",A)  
det = np.linalg.det(A)  
print("this is the determinante\n",det)
```

```
this is A  
[[5 0 0]  
 [3 1 1]  
 [0 1 2]]
```

this is the determinante  
4.999999999999999