

# Curso de Mathematica

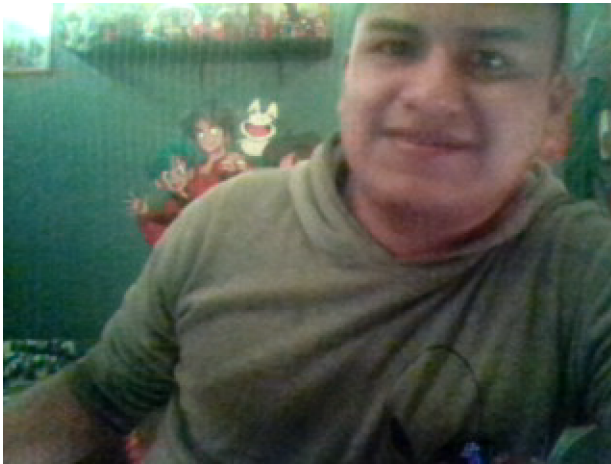
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2025/09/17

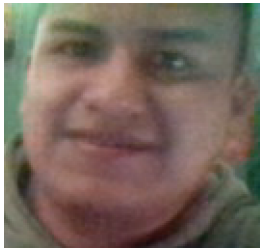
## 1. Introducción

```
In[1]:= yo=CurrentImage[]
```

Out[1]=



```
In[2]:= FacialFeatures[yo]
```

Out[2]= {<| Image → , Age → 24, Gender → Female, Emotion → neutral |>}

---

2025/09/22

## 2. Comandos Internos

```
In[24]:= SetDirectory[]
```

Out[24]=

C:\Users\IBM

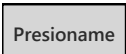
In[25]:= **Date[]**

Out[25]=  
{2025, 9, 23, 22, 46, 39.8336576}

### 3. Comandos Interactivos

In[26]:= **Speak["Hola Mundo"]**

In[27]:= **Button["Presioname", Speak[Thank You]]**

Out[27]=  


In[28]:= **Speak["Hello Wolfram"]**

### 4. Flags

In[29]:= **Entity["Country", "Ecuador"]**

Out[29]=  


In[30]:= **Entity["Country", "Ecuador"] ["Flag"]**

Out[30]=  


In[31]:= **EntityValue[{Entity["Country", "UnitedStates"], Entity["Country", "Brazil"], Entity["Country", "China"]}]**

Out[31]=  
{, , 

In[33]:= **EntityValue[{Entity["Country", "UnitedStates"], Entity["Country", "Brazil"], Entity["Country", "China"]}]**

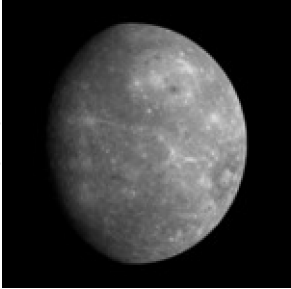
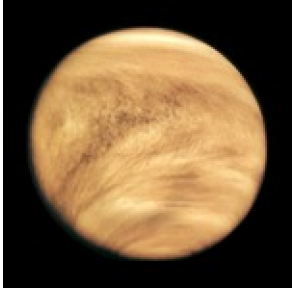





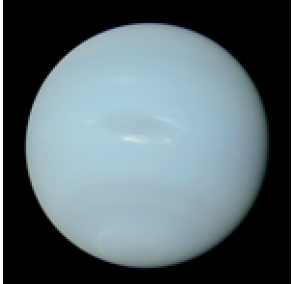
Out[33]=  
, , 

## 5. Planets

```
In[34]:= EntityList[EntityClass["Planet", All]]
```

```
Out[34]= { Mercury , Venus , Earth , Mars , Jupiter , Saturn , Uranus , Neptune }
```

```
In[36]:= EntityValue[EntityClass["Planet", All], "Image"]
```

```
Out[36]= {  ,  ,  ,  ,  ,  ,  ,  }
```

## 6. Conversiones

```
In[37]:= UnitConvert[Quantity[2.6, "Hours"], "Minutes"]
```

```
Out[37]= 156. min
```

```
In[39]:= Quantity[7.5, "Feet"] + Quantity[14, "Centimeters"]
```

```
Out[39]= 242.6 cm
```

```
In[40]:= UnitSimplify[Quantity[242.6, "Centimeters"]]
```

```
Out[40]= 2.426 m
```

```
In[41]:= CurrencyConvert[Quantity[100., "TRY"], Quantity[1, "USDollars"]]
```

```
Out[41]= $2.41
```

```
In[42]:= UnitConvert[Quantity[5.12363, "USDollars"], "USCents"]
```

```
Out[42]= 512.363¢
```

```
In[43]:= N[UnitConvert[Quantity[5, "Inches"], "Centimeters"]]
```

```
Out[43]= 12.7 cm
```

## 7. Listas

```
In[44]:= Clear[a]
```

```
In[53]:= a = {2, 6, 8, 9, 10}
```

```
Out[53]= {2, 6, 8, 9, 10}
```

```
In[46]:= b = {5, 8, 9, 5}
```

```
Out[46]= {5, 8, 9, 5}
```

```
In[54]:= 3 * a
```

```
Out[54]= {6, 18, 24, 27, 30}
```

```
In[55]:= Clear[a]
```

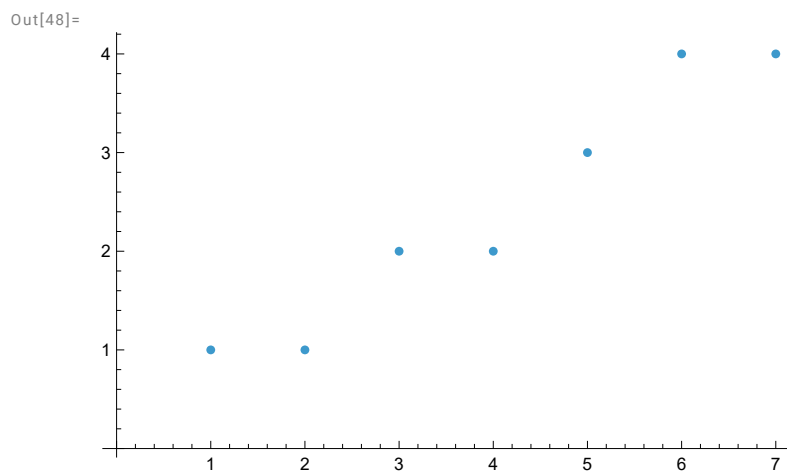
In[56]:= **a**

Out[56]=  
**a**

In[71]:= **a \* 5**

Out[71]=  
**5 a**

In[48]:= **ListPlot[{1, 1, 2, 2, 3, 4, 4}]**



## 8. Funciones para Listas

In[58]:= **?Range**

Out[58]=

Symbol ⓘ

Range[ $i_{max}$ ] generates the list {1, 2, ...,  $i_{max}$ }.

Range[ $i_{min}$ ,  $i_{max}$ ] generates the list { $i_{min}$ , ...,  $i_{max}$ }.

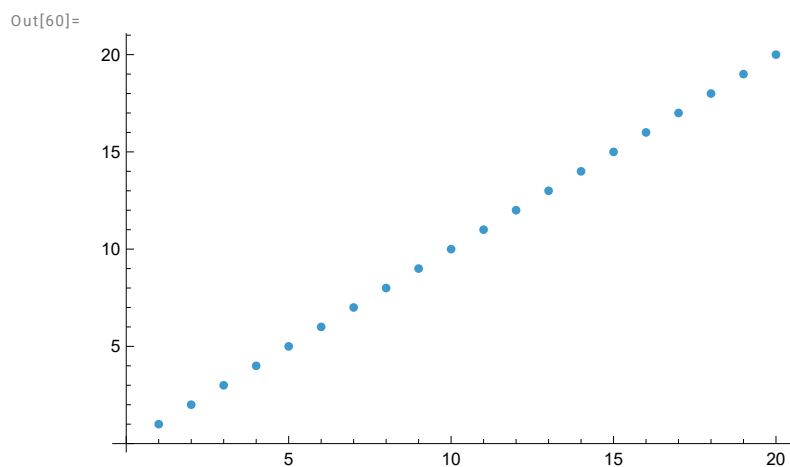
Range[ $i_{min}$ ,  $i_{max}$ ,  $di$ ] uses step  $di$ .

▼

In[59]:= **Range[25]**

Out[59]=  
**{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25}**

```
In[60]:= ListPlot[Range[20]]
```



```
In[61]:= Reverse[{1, 2, 3, 4}]
```

Out[61]=  
**{4, 3, 2, 1}**

```
In[62]:= Join[{1, 2, 3}, {6}]
```

Out[62]=  
**{1, 2, 3, 6}**

```
In[63]:= Join[Range[3], Range[5]]
```

Out[63]=  
**{1, 2, 3, 1, 2, 3, 4, 5}**

## 9. Ejercicios en clase

**9.1.** {1, 2, 3, 4, 5, 3, 2, 1, 10, 15}

```
In[64]:= Join[Range[5], Reverse[Range[3]], {10, 15}]
```

Out[64]=  
**{1, 2, 3, 4, 5, 3, 2, 1, 10, 15}**

**9.2.** {5, 6, 7, 8, 1, 2, 4, 5, 4, 3}

```
In[65]:= Join[Range[5, 8], Range[5], {4, 3}]
```

Out[65]=  
**{5, 6, 7, 8, 1, 2, 3, 4, 5, 4, 3}**

## 10. Manipulación de listas

```
In[66]:= list = Join[{1, 2, 3}, {6}]
```

```
Out[66]= {1, 2, 3, 6}
```

```
In[67]:= MemberQ[list, 6]
```

```
Out[67]= True
```

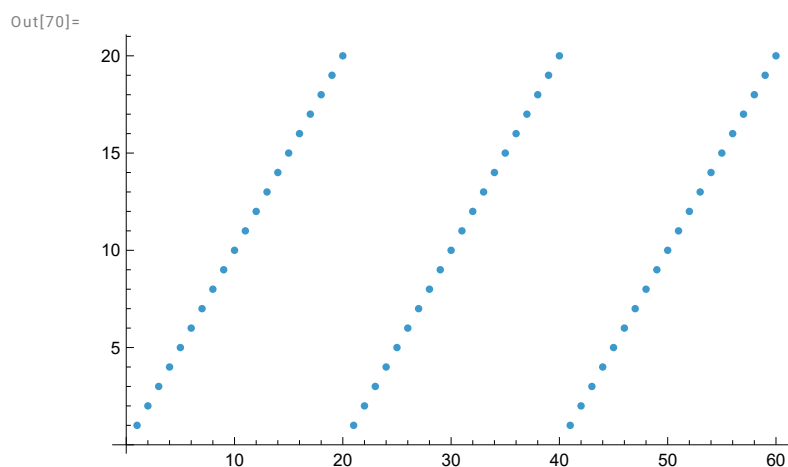
```
In[68]:= Join[Range[4] + 4, Range[2], Range[2] + 3, {3}]
```

```
Out[68]= {5, 6, 7, 8, 1, 2, 4, 5, 3}
```

```
In[69]:= Join[Range[4] + 4, Range[2], Range[2] + 3, Reverse[Range[2]+2]]
```

```
Out[69]= {5, 6, 7, 8, 1, 2, 4, 5, 4, 3}
```

```
In[70]:= ListPlot[Join[Range[20], Range[20], Range[20]]]
```



## 11. Funciones Adicionales

```
In[72]:= Range[10^2]
```

```
Out[72]= {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21,
22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41,
42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61,
62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81,
82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100}
```

```
In[73]:= Sort[{4, 2, 1, 3, 6}]
```

```
Out[73]= {1, 2, 3, 4, 6}
```

```
In[74]:= Length[{5, 4, 5, 3, 4, 5}]
```

```
Out[74]= 6
```

```
In[75]:= Total[{1, 2, 2, 2}]
```

```
Out[75]= 7
```

```
In[76]:= Total[Range[10]]
```

```
Out[76]= 55
```

```
In[77]:= Count[{a, a, a, a, c, b, a}, b]
```

```
Out[77]= 1
```

```
In[78]:= First[{7, 6, 5}]
```

```
Out[78]= 7
```

```
In[79]:= Last[{7, 6, 5}]
```

```
Out[79]= 5
```

```
In[81]:= First[Sort[{6, 7, 1, 2, 4, 5}]]
```

```
Out[81]= 1
```

```
In[82]:= Min[{6, 7, 1, 2, 4, 5}]
```

```
Out[82]= 1
```

```
In[83]:= IntegerDigits[1988]
```

```
Out[83]= {1, 9, 8, 8}
```



```
In[84]:= Last [IntegerDigits [1988]]
```

```
Out[84]=  
8
```

```
In[85]:= Join [Range [4], Reverse [Range [4]]]
```

```
Out[85]=  
{1, 2, 3, 4, 4, 3, 2, 1}
```

```
In[86]:= Range [RandomInteger [30]]
```

```
Out[86]=  
{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24}
```

# Tarea 1

2025/09/23

1. Calcular  $1 + 2 + 3$ .

```
In[4]:= 1+2+3
```

```
Out[4]= 6
```

2. Sumar los números 1, 2, 3, 4, 5.

```
In[5]:= Total [Range [5]]
```

```
Out[5]= 15
```

3. Multiplicar los números 1, 2, 3, 4, 5.

```
In[6]:= 1x2x3x4x5
```

```
Out[6]= 120
```

4. Calcular 5 al cuadrado.

```
In[7]:= 52
```

```
Out[7]= 25
```

5. Calcular 3 elevado a la cuarta potencia.

In[8]:=  $3^4$

Out[8]= 81

6. Calcular 10 elevado a la potencia 12.

In[9]:=  $10^{12}$

Out[9]= 1 000 000 000 000

7. Calcular 3 elevado a la potencia  $7 \times 8$ .

In[10]:=  $3^{7 \times 8}$

Out[10]=

523 347 633 027 360 537 213 511 521

8. Colocar los paréntesis necesarios para que  $4 - 2 \times 3 + 4$  sea igual a 14.

In[11]:=  $(4-2) \times (3+4)$

Out[11]=

14

9. Calcular veintinueve mil multiplicado por setenta y tres.

In[\*]:= 29000\*73

Out[\*]=

2 117 000

10. Sumar los enteros entre -3 y +3.

In[12]:= Total[Range[-3, 3]]

Out[12]=

0

11. Calcule  $7+6+5$  usando la función Plus.

In[13]:= Plus[7,6,5]

Out[13]=

18

12. Calcule  $2 \times (3+4)$  usando Times y Plus.

In[14]:= Times[2, Plus[3,4]]

Out[14]=

14

13. Utilice Max para encontrar el máximo entre  $6 \times 8$  y  $5 \times 9$ .

```
In[15]:= Max[Times[6, 8], Times[5, 9]]
```

```
Out[15]=  
48
```

**14.** Use RandomInteger para generar un número aleatorio entre 0 y 1000.

```
In[16]:= RandomInteger[{0, 1000}]
```

```
Out[16]=  
880
```

**15.** Use Plus y RandomInteger para generar un número entre 10 y 20.

```
In[17]:= Plus[10, RandomInteger[{0, 10}]]
```

```
Out[17]=  
13
```

**16.** Calcule  $5 \times 4 \times 3 \times 2$  usando Times.

```
In[18]:= Times[5, 4, 3, 2]
```

```
Out[18]=  
120
```

**17.** Calcule  $2 - 3$  usando Subtract.

```
In[19]:= Subtract[2, 3]
```

```
Out[19]=  
-1
```

**18.** Calcule  $(8+7) \times (9+2)$  usando Times y Plus.

```
In[20]:= Times[Plus[8, 7], Plus[9, 2]]
```

```
Out[20]=  
165
```

**19.** Calcule  $(26 - 89) / 9$  usando Subtract y Divide.

```
In[21]:= Divide[Subtract[26, 89], 9]
```

```
Out[21]=  
-7
```

**20.** Calcule  $100 - 5^2$  usando Subtract y Power.

```
In[22]:= Subtract[100, Power[5, 2]]
```

```
Out[22]=  
75
```

**21.** Encuentre el mayor entre  $3^5$  y  $5^3$ .

```
In[23]:= Max[Power[3, 5], Power[5, 3]]
```

```
Out[23]=
```

**243**