

## PARCIAL NUMERICO

### DATOS DE MI EPSILON:

```
Console Terminal x Jobs x
R 4.1.0 . ~/
> .Machine
$double.eps
[1] 2.220446e-16

$double.neg.eps
[1] 1.110223e-16

$double.xmin
[1] 2.225074e-308

$double.xmax
[1] 1.797693e+308

$double.base
[1] 2

$double.digits
[1] 53

$double.rounding
[1] 5

$double.guard
[1] 0

$double.ulp.digits
[1] -52

$double.neg.ulp.digits
[1] -53

$double.exponent
[1] 11

$double.min.exp
[1] -1022
```

```
R 4.1.0 · ~/
$double.max.exp
[1] 1024

$integer.max
[1] 2147483647

$sizeof.long
[1] 4

$sizeof.longlong
[1] 8

$sizeof.longdouble
[1] 16

$sizeof.pointer
[1] 8

$longdouble.eps
[1] 1.084202e-19

$longdouble.neg.eps
[1] 5.421011e-20

$longdouble.digits
[1] 64

$longdouble.rounding
[1] 5

$longdouble.guard
[1] 0

$longdouble.ulp.digits
[1] -63

$longdouble.neg.ulp.digits
[1] -64

$longdouble.exponent
[1] 15

$longdouble.min.exp
[1] -16382

$longdouble.max.exp
[1] 16384

> |
```

**PUNTO1F:**

Parcia x Copia x punto x punto x  $x^3 + 2x + \sqrt{6+2}$  x Ec x Analisis x Analisis x raiz ei x +

wolframalpha.com/input/?i=x%5E3%2B2x%2B%286%2B2%29

Input

$$x^3 + 2x + \sqrt{6+2}$$

Result ☒ Step-by-step solution

$$x^3 + 2x + 2\sqrt{2}$$

Plots

(x from -1.2 to 1.2)

(x from -3.5 to 3.5)

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8:01 a.m. 27/08/2021

Parcia x Copia x punto x punto x  $x^3 + 2x + \sqrt{6+2}$  x Ec x Analisis x Analisis x raiz ei x +

wolframalpha.com/input/?i=x%5E3%2B2x%2B%286%2B2%29

(x from -3.5 to 3.5)

Alternate form

$$x(x^2 + 2) + 2\sqrt{2}$$

Real root   ☒ Step-by-step solution

$$x \approx -0.96496$$

Complex roots

$$x \approx 0.4825 - 1.6427i$$

$$x \approx 0.4825 + 1.6427i$$

Roots in the complex plane

Im(x)

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colab.research.google.com/drive/1XmsL19ZtPXtYxoMPPpvP9hHjEyBRjSq2?authuser=1#scrollTo=QLnAVCAjL0fd

punto1.ipynb

Archivo Editar Ver Insertar Entorno de ejecución Herramientas Ayuda Se han guardado tod...

+ Código + Texto

```
#f
from matplotlib import pyplot
import math
import numpy as np
k=math.sqrt(6+2)
def f(x):
    return (x**3) + (2*x) + k
#tol= 10**(-16)
x = np.arange (-3,0,0.1)
pyplot.plot (x, [f(i) for i in x])
pyplot.axhline(0,color = "black")
pyplot.axvline(0,color = "black")
pyplot.show()
```



0 s completado a las 8:37

8:37 a.m. 27/08/2021

colab.research.google.com/drive/1XmsL19ZtPXtYxoMPPpvP9hHjEyBRjSq2?authuser=1#scrollTo=QLnAVCAjL0fd

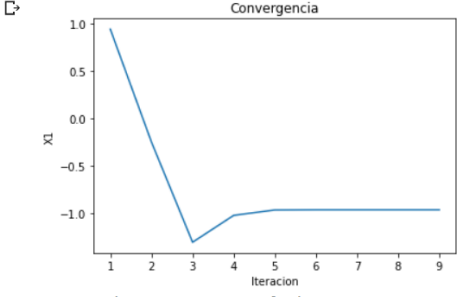
punto1.ipynb

Archivo Editar Ver Insertar Entorno de ejecución Herramientas Ayuda Se han guardado tod...

+ Código + Texto

Solucion aproximada con k raiz(8): -0.964957234157834  
Numero de iteraciones 9

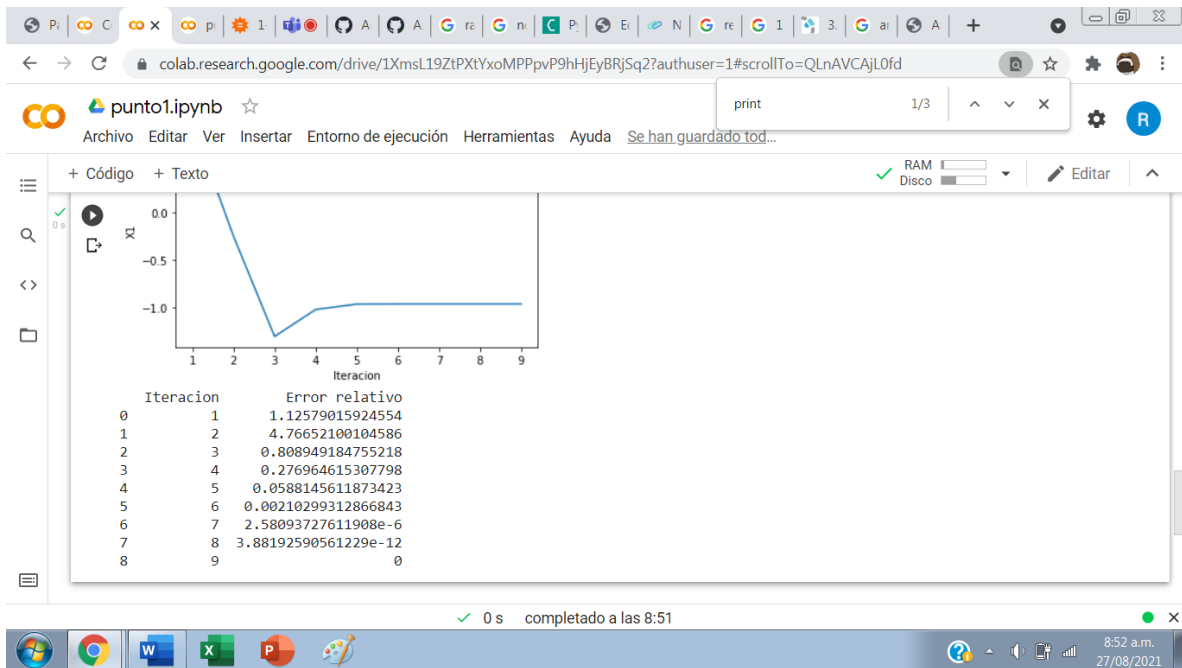
Convergencia



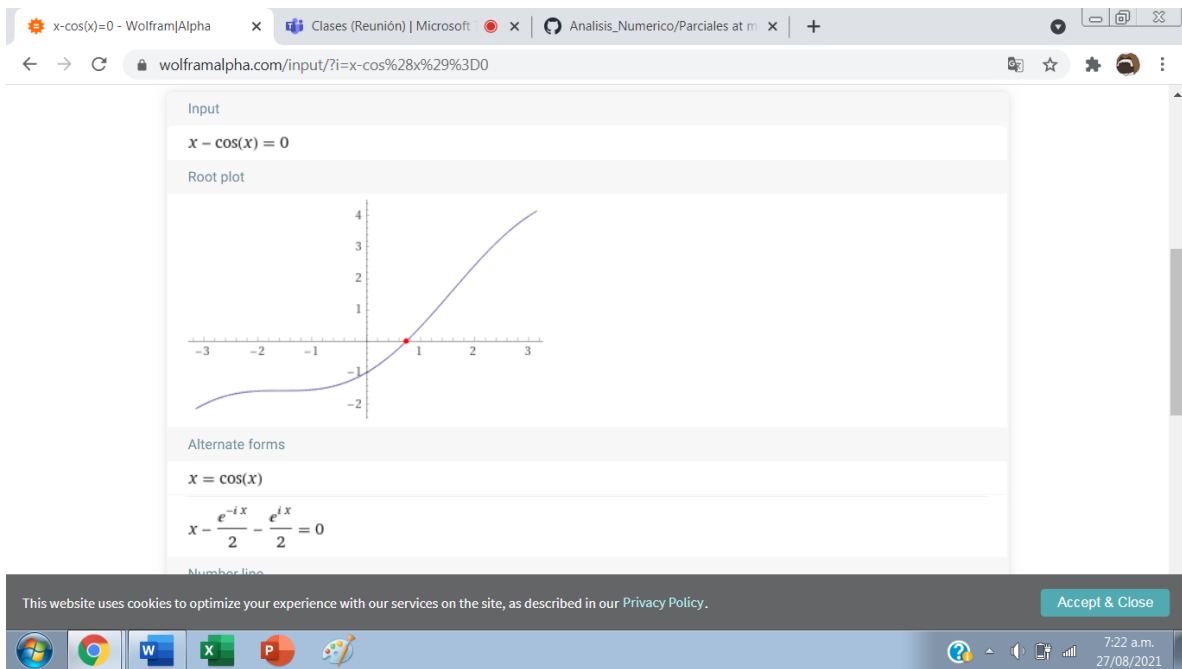
Iteracion	Error relativo	
0	1	1.12579015924554
1	2	4.76652100104586
2	3	0.808949184755218

0 s completado a las 8:51

8:51 a.m. 27/08/2021

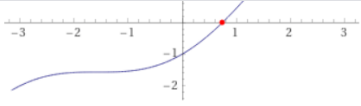


### PUNTO 3B:



x-cos(x)=0 - Wolfram|Alpha


wolframalpha.com/input/?i=x-cos%28x%29%3D0



Alternate forms

$$x = \cos(x)$$
$$x - \frac{e^{-ix}}{2} - \frac{e^{ix}}{2} = 0$$

Number line



Solution

$x \approx 0.739085$

Exact form More digits

Download Page

POWERED BY THE WOLFRAM LANGUAGE

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Copia de T... punto1.ipynb Punto3.ipynb punto6.ipynb x-cos(x)=0 Clases Analisis\_N...

colab.research.google.com/drive/1hVICKLo0Ghb-DSHLRZwPx357\_cv8Vd2?authuser=1

Punto3.ipynb

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+ Código + Texto

RAM Disco

Editar

```
#b
import numpy as np
import matplotlib.pyplot as plt
from matplotlib import pyplot
import math

def f(x):
    return x - np.cos(x)          #funcion f(x)
def g(x):
    return np.cos(x)              #funcion g(x) despejando x de f(x)

def fixedPoint(e):
    itemax = 100
    a = 0
    b = 3
    cont = 1
    b = g(a)
```

0 s completado a las 7:45



colab.research.google.com/drive/1hVICKLo0Ghb-DSHLRZwPx357\_cv8Vd2-?authuser=1

Punto3.ipynb

Archivo Editar Ver Insertar Entorno de ejecución Herramientas Ayuda Se han guardado tod...

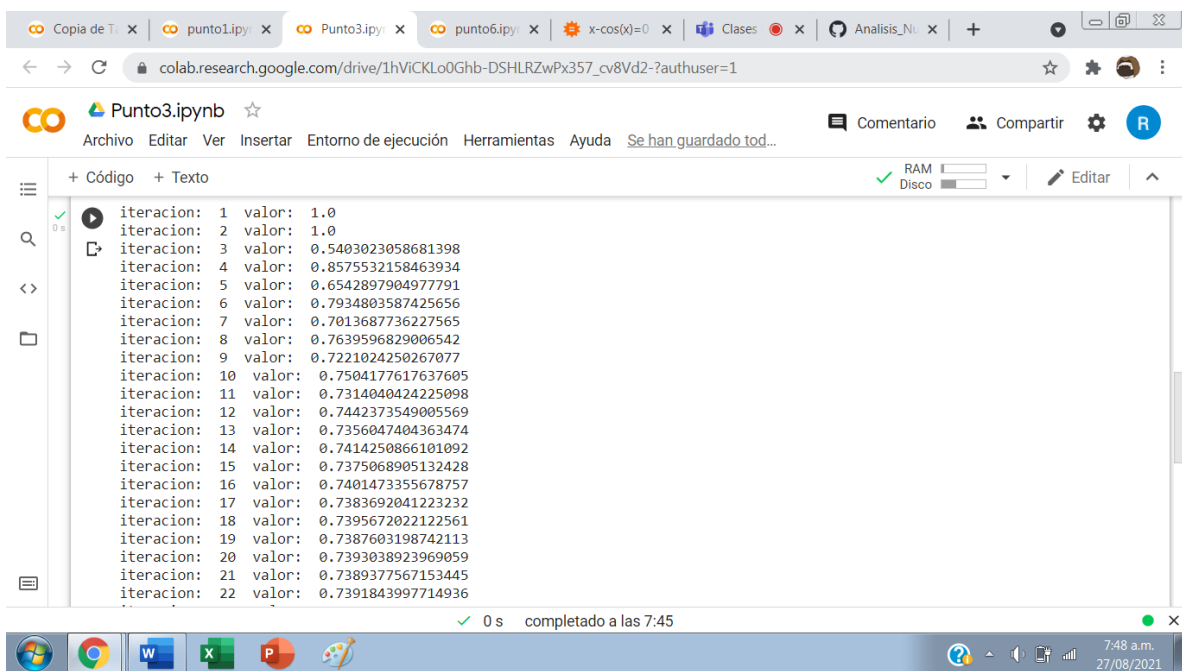
```
cont = 1
b = g(a)

err = abs(b-a)
while (err >= e and cont < itemax):
    print("iteracion: ", cont, " valor: ", b)
    b = g(a)
    err = abs(b-a)
    a = b
    cont += 1

if (cont >= itemax):
    print("diver")
else:
    print("ITERACIONES: ", cont-1)
    return b
print("respuesta: ", fixedPoint(1e-5))
```

0 s completado a las 7:45

## Resultados:



colab.research.google.com/drive/1hVICKLo0Ghb-DSHLRZwPx357\_cv8Vd2-?authuser=1

Punto3.ipynb

Archivo Editar Ver Insertar Entorno de ejecución Herramientas Ayuda Se han guardado tod...

```
iteracion: 1 valor: 1.0
iteracion: 2 valor: 1.0
iteracion: 3 valor: 0.5403023058681398
iteracion: 4 valor: 0.8575532158463934
iteracion: 5 valor: 0.6542897904977791
iteracion: 6 valor: 0.7934803587425656
iteracion: 7 valor: 0.7013687736227565
iteracion: 8 valor: 0.7639596829006542
iteracion: 9 valor: 0.7221024250267077
iteracion: 10 valor: 0.7504177617637605
iteracion: 11 valor: 0.7314040424225098
iteracion: 12 valor: 0.7442373549005569
iteracion: 13 valor: 0.7356047404363474
iteracion: 14 valor: 0.7414250866101092
iteracion: 15 valor: 0.7375068905132428
iteracion: 16 valor: 0.7401473355678757
iteracion: 17 valor: 0.7383692041223232
iteracion: 18 valor: 0.7395672022122561
iteracion: 19 valor: 0.7387603198742113
iteracion: 20 valor: 0.7393038923969059
iteracion: 21 valor: 0.7389377567153445
iteracion: 22 valor: 0.7391843997714936
```

0 s completado a las 7:45

Colab notebook interface showing a Jupyter notebook named "Punto3.ipynb". The notebook displays a loop of 30 iterations, each showing a value. The final value is 0.7390822985224024.

```

iteracion: 13 valor: 0.7356047404363474
iteracion: 14 valor: 0.7414250866101092
iteracion: 15 valor: 0.7375068905132428
iteracion: 16 valor: 0.7401473355678757
iteracion: 17 valor: 0.7383692041223232
iteracion: 18 valor: 0.7395672022122561
iteracion: 19 valor: 0.7387603198742113
iteracion: 20 valor: 0.7393038923969059
iteracion: 21 valor: 0.7389377567153445
iteracion: 22 valor: 0.7391843997714936
iteracion: 23 valor: 0.7390182624274122
iteracion: 24 valor: 0.7391301765296711
iteracion: 25 valor: 0.7390547907469174
iteracion: 26 valor: 0.7391055719265363
iteracion: 27 valor: 0.7390713652989449
iteracion: 28 valor: 0.7390944073790913
iteracion: 29 valor: 0.739078885994992
iteracion: 30 valor: 0.7390893414033927
ITERACIONES: 30
respuesta: 0.7390822985224024

```

The notebook is running on a Google Colab environment, and the execution is completed at 7:45.

Toma 30 iteraciones para cumplir en su al quedar 0.73908

## PUNTO 6:

WolframAlpha interface showing the input  $1-x+x^2-x^3+x^4-x^5+x^6-x^7$ . The interface displays the input, the natural language input, and the resulting plot of the function  $y = 1 - x + x^2 - x^3 + x^4 - x^5 + x^6 - x^7$  for  $x$  from 0.5 to 1.0.

The plot shows a curve starting at  $y \approx 0.6$  at  $x = 0.5$  and ending at  $y = 0$  at  $x = 1.0$ . The x-axis is labeled from 0.6 to 1.0, and the y-axis is labeled from 0.2 to 0.6.

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$1-x+x^2-...x^n$



Google Chrome browser window showing a Jupyter Notebook interface (punto6.ipynb) with Python code for calculating powers of 1.001 using a loop.

Browser tabs: Copia, punto1, pur, 1-x+x^, Progra, 1-x+x^, Eddy H, Analisis, Analisis, raiz en, newtor.

Address bar: colab.research.google.com/drive/1mtzMR1PECH2Tyogu1On7jPyLNNBam56?authuser=1#scrollTo=RQgP\_wSG3BKk

Page title: punto6.ipynb

Menu: Archivo, Editar, Ver, Insertar, Entorno de ejecución, Herramientas, Ayuda, Guardando...

Buttons: Comentario, Compartir, Conectar, Editar

Code:

```
def p(x):
    cont=0
    print(cont)
    while (cont<99):#llegar hasta el exp 99
        #se supone es un ciclo para dar el exponente contador a c intercalando si x es positivo o negativo
        if (cont%2==0) :
            #x**cont
            p=x**cont
            cont+=1
            print(cont," : ",p)
        else:#impar
            #-x**cont
            ip=-x**cont
            cont+=1
            print(cont," : ",ip)
    print("x= 1.001")
    p(1.001)
    #no me alcanzo el tiempo
```

Windows taskbar at the bottom shows icons for Windows, Chrome, Word, Excel, PowerPoint, and Teams. The system clock shows 9:09 a.m. on 27/08/2021.