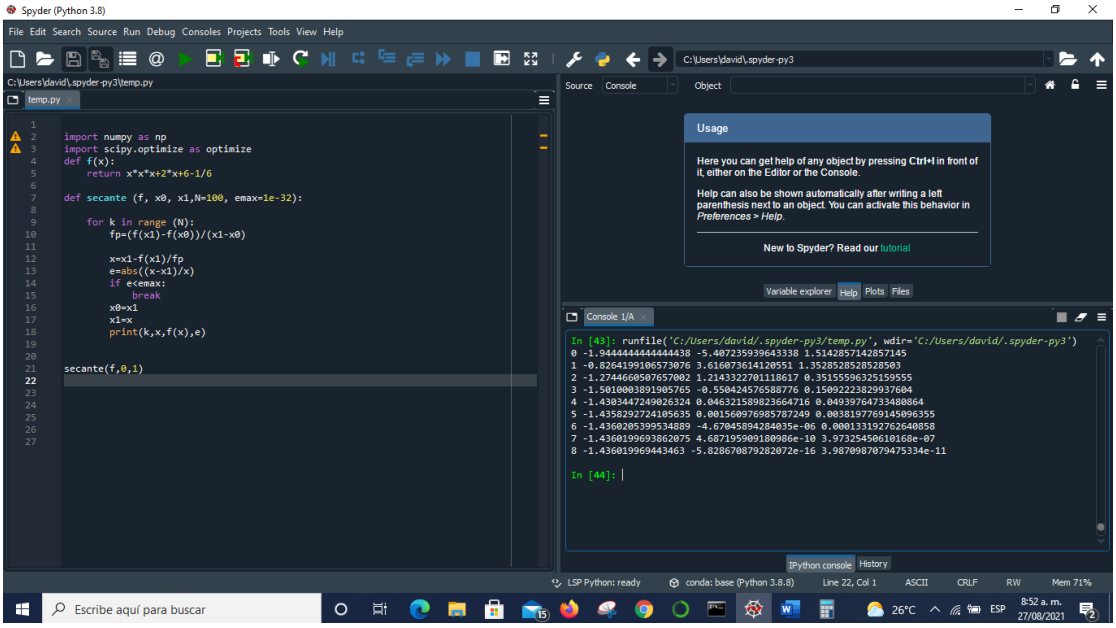
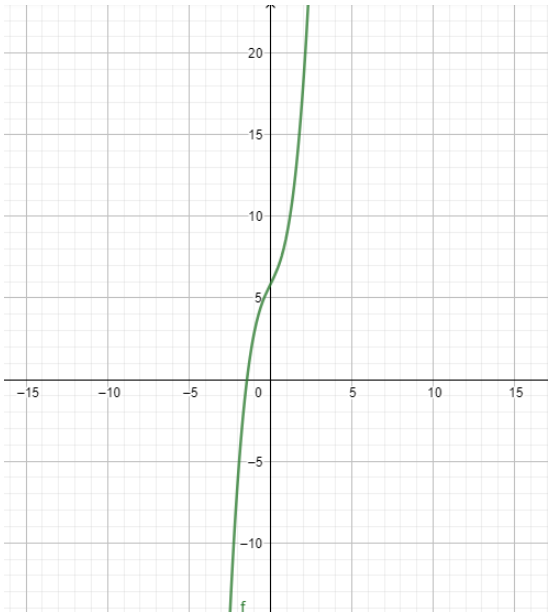
PARCIAL 1

ANALISIS NUMERICO

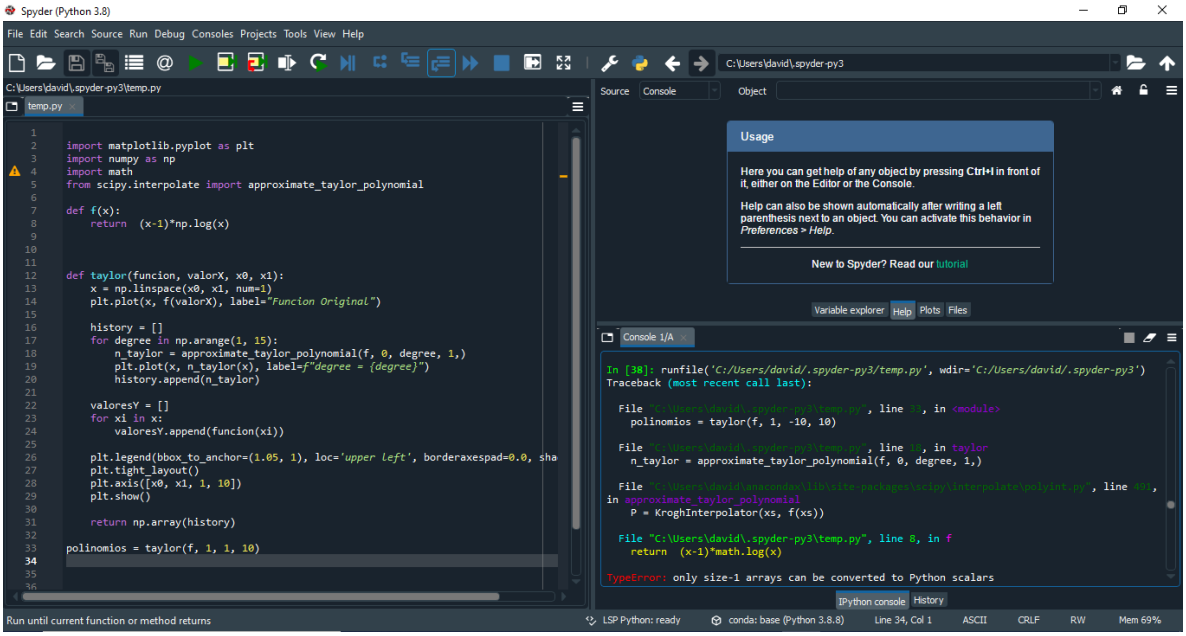
DAVID ALFONSO ANTELIZ BONILLA-1004924436

Punto 1B





Punto 2B


Spyder (Python 3.8)
File Edit Search Source Run Debug Consoles Projects Tools View Help
C:\Users\david\.spyder-py3\temp.py
temp.py
import matplotlib.pyplot as plt
import numpy as np
import math
from scipy.interpolate import approximate_taylor_polynomial
def f(x):
return (x-1)*np.log(x)
def taylor(funcion, valorX, x0, x1):
x = np.linspace(x0, x1, num=1)
plt.plot(x, f(valorX), label="Funcion Original")
history = []
for degree in np.arange(1, 15):
n_taylor = approximate_taylor_polynomial(f, 0, degree, 1,)
plt.plot(x, n_taylor(x), label=f"degree = {degree}")
history.append(n_taylor)
valoresY = []
for xi in x:
valoresY.append(funcion(xi))
plt.legend(bbox_to_anchor=(1.05, 1), loc='upper left', borderaxespad=0.0, sha
plt.tight_layout()
plt.axis([x0, x1, 1, 10])
plt.show()
return np.array(history)
polinomios = taylor(f, 1, 1, 10)
Source Console Object
Usage
Here you can get help of any object by pressing Ctrl+I in front of it, either on the Editor or the Console.
Help can also be shown automatically after writing a left parenthesis next to an object. You can activate this behavior in Preferences > Help.
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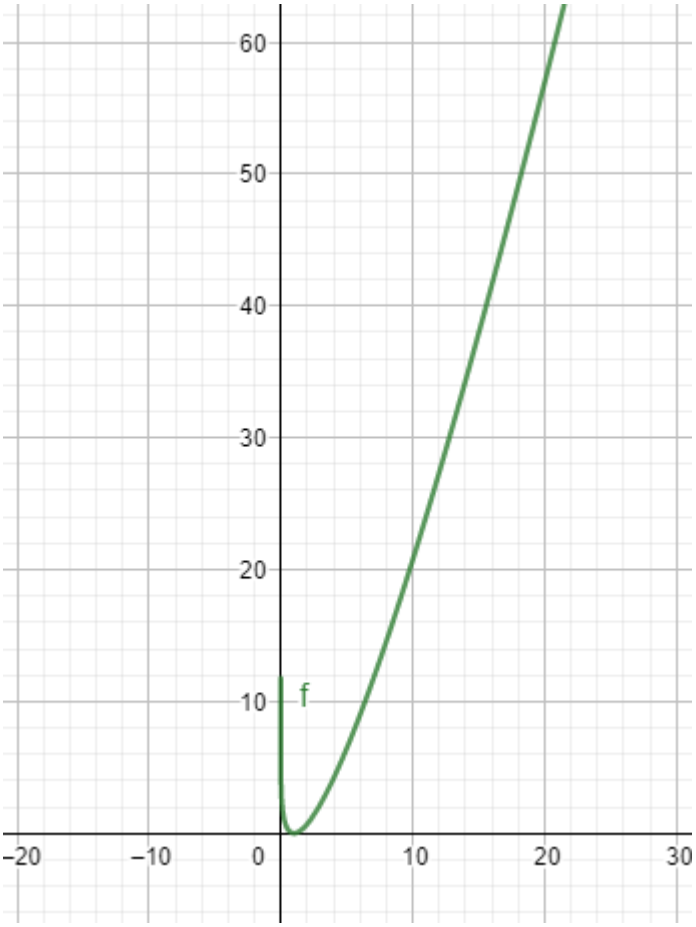
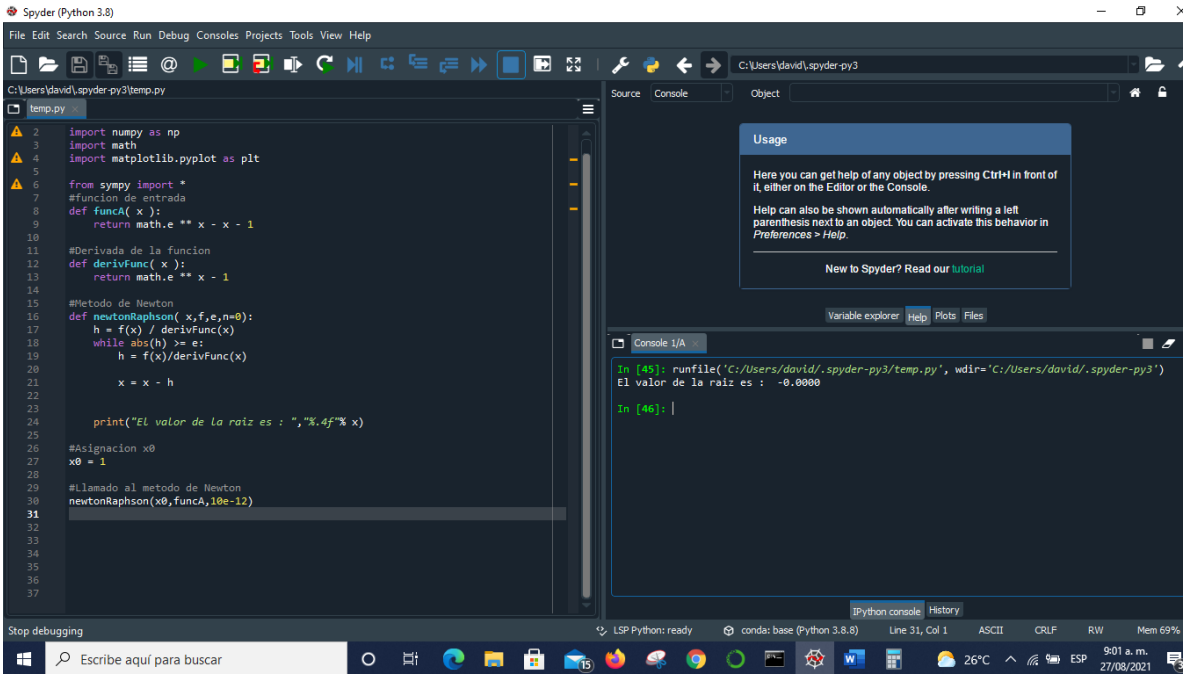
Variable explorer Help Plots Files
Console 1/A
In [38]: runfile('C:/Users/david/.spyder-py3/temp.py', wdir='C:/Users/david/.spyder-py3')
Traceback (most recent call last):
File "C:\Users\david\.spyder-py3\temp.py", line 33, in <module>
polinomios = taylor(f, 1, -10, 10)
File "C:\Users\david\.spyder-py3\temp.py", line 19, in taylor
n_taylor = approximate_taylor_polynomial(f, 0, degree, 1,)
File "C:\Users\david\anaconda3\lib\site-packages\scipy\interpolate\polyint.py", line 893, in approximate_taylor_polynomial
P = KroghInterpolator(xs, f(xs))
File "C:\Users\david\.spyder-py3\temp.py", line 8, in f
return (x-1)*math.log(x)
TypeError: only size-1 arrays can be converted to Python scalars
IPython console History
Run until current function or method returns
LSP Python: ready
conda: base (Python 3.8.8)
Line 34, Col 1
ASCII
CRLF
RW
Mem 69%


60
50
40
30
20
10
f
−20
−10
0
10
20
30

Punto 5


Spyder (Python 3.8)
File Edit Search Source Run Debug Consoles Projects Tools View Help
C:\Users\david\.spyder-py3\temp.py
temp.py
import numpy as np
import math
import matplotlib.pyplot as plt
from sympy import *
#funcion de entrada
def funcA(x):
return math.e ** x - x - 1
#Derivada de la funcion
def derivFunc(x):
return math.e ** x - 1
#Metodo de Newton
def newtonRaphson(x,f,e,n=0):
h = f(x) / derivFunc(x)
while abs(h) >= e:
h = f(x)/derivFunc(x)
x = x - h
print("El valor de la raiz es : ","%.4f"% x)
#Asignacion x0
x0 = 1
#Llamado al metodo de Newton
newtonRaphson(x0,funcA,10e-12)
Usage
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Console 1/A
In [45]: runfile('C:/Users/david/.spyder-py3/temp.py', wdir='C:/Users/david/.spyder-py3')
El valor de la raiz es : -0.0000
In [46]:
IPython console History
Stop debugging
LSP Python: ready
conda: base (Python 3.8.8)
Line 31, Col 1
ASCII
CRLF
RW
Mem 69%
Escribe aquí para buscar
26°C
ESP
9:01 a. m.
27/08/2021