File Edit Selection View Go Run Terminal Help   newtonTarea.py - codes - Visual Studio Code

TERMINAL ···   2: Python Debug Consc

```
x: 1.5596104694623694 x_i: 1.5596104694623694 error: 4.694624e-07
x: 1.5596104694623694 x_i: 1.5596104694623694 error: 4.694624e-07
x: 1.5596104694623694 x_i: 1.5596104694623694 error: 4.694624e-07
la raíz es  1.5596104694623694 con un error de  4.694624e-07
PS F:\MEGA\CETYS\Drei\Metodos numericos\Parcial 1\codes>  cd 'f:\MEGA\CETYS\Drei\Metodos numericos\Parcial 1\codes'; & 'C:\Users\Yo\AppData\Local\Programs\Python\Python38-32\python.exe' 'c:\Users\Yo\.vscode\extensions\ms-python.python-2020.8.105369\pythonFiles\lib\python\debugpy\launcher' '49752' '--' 'f:\MEGA\CETYS\Drei\Metodos numericos\Parcial 1\codes\raices\newtonTarea.py'
Método de Newton para x-tan(x)
x: 4.6854762440484965 x_i4.3 1.920668e-01
x: 4.661952316374091 x_i4.6854762440484965 1.685429e-01
x: 4.623352322644727 x_i4.661952316374091 1.299429e-01
x: 4.5709259628838605 x_i4.623352322644727 7.751650e-02
x: 4.521218411745725 x_i4.5709259628838605 2.780895e-02
x: 4.49702847909729 x_i4.521218411745725 3.619021e-03
x: 4.493471158564165 x_i4.49702847909729 6.170066e-05
x: 4.493409475862249 x_i4.493471158564165 1.795319e-08
x: 4.493409457909066 x_i4.493409475862249 6.217249e-15
x: 4.493409457909064 x_i4.493409457909066 4.440892e-15
x: 4.493409457909064 x_i4.493409457909064 4.440892e-15
x: 4.493409457909064 x_i4.493409457909064 4.440892e-15
x: 4.493409457909064 x_i4.493409457909064 4.440892e-15
x: 4.493409457909064 x_i4.493409457909064 4.440892e-15
x: 4.493409457909064 x_i4.493409457909064 4.440892e-15
la raíz es  4.493409457909064 con un error de  4.440892e-15

Método de Newton para x^x - 2
x: 1.563083820005307 x_i: 1.5 error: 3.473820e-03
x: 1.559621837428667 x_i: 1.563083820005307 error: 1.183743e-05
x: 1.559610469584384 x_i: 1.559621837428667 error: 4.695844e-07
x: 1.5596104694623694 x_i: 1.559610469584384 error: 4.694624e-07
x: 1.5596104694623694 x_i: 1.5596104694623694 error: 4.694624e-07
x: 1.5596104694623694 x_i: 1.5596104694623694 error: 4.694624e-07
x: 1.5596104694623694 x_i: 1.5596104694623694 error: 4.694624e-07
x: 1.5596104694623694 x_i: 1.5596104694623694 error: 4.694624e-07
x: 1.5596104694623694 x_i: 1.5596104694623694 error: 4.694624e-07
x: 1.5596104694623694 x_i: 1.5596104694623694 error: 4.694624e-07
x: 1.5596104694623694 x_i: 1.5596104694623694 error: 4.694624e-07
x: 1.5596104694623694 x_i: 1.5596104694623694 error: 4.694624e-07
x: 1.5596104694623694 x_i: 1.5596104694623694 error: 4.694624e-07
x: 1.5596104694623694 x_i: 1.5596104694623694 error: 4.694624e-07
x: 1.5596104694623694 x_i: 1.5596104694623694 error: 4.694624e-07
la raíz es  1.5596104694623694 con un error de  4.694624e-07
PS F:\MEGA\CETYS\Drei\Metodos numericos\Parcial 1\codes>
```

newtonTarea.py ×

raices > newtonTarea.py > newtonTanget

```python
#Hecho por Elian Javier Cruz Esquivel

import math

realRootTan = 4.49340945790906
realRootXtoX = 1.55961

def newtonTanget(x_i, n):
    print("Método de Newton para x-tan(x)" )
    tan = lambda x: x - math.tan(x)
    tanDerivative = lambda x : 1-(1/math.cos(x))**2
    for i in range(n):
        x = x_i - (tan(x_i)/tanDerivative(x_i))
        print("x: "+str(x), "x_i"+str(x_i), "{:3e}".format(abs(realRootTan-x)))
        x_i = x
    return x

def newtonXtoTheX(x_i, n):
    print("\nMétodo de Newton para x^x - 2" )
    f = lambda x: x**x - 2
    fDerivative = lambda x: (x**x)*(math.log1p(x-1)+1)
    for i in range(n):
        x = x_i - (f(x_i)/fDerivative(x_i))
        print("x: "+str(x),"x_i: "+ str(x_i),"error: "+ "{:3e}".format(abs(realRootXtoX-x)))
        x_i = x
    return x

rTan = newtonTanget(4.3,15)
print("la raíz es ",rTan, "con un error de " ,"{:3e}".format(abs(rTan-realRootTan)))

rXtoX = newtonXtoTheX(1.5,15)
print("la raíz es ",rXtoX, "con un error de " ,"{:3e}".format(abs(rXtoX-realRootXtoX)))
```

thon 3.8.2 32-bit ⊗ 0 ⚠ 0   Ln 15, Col 16 Spaces: 4 UTF-8 CRLF Python