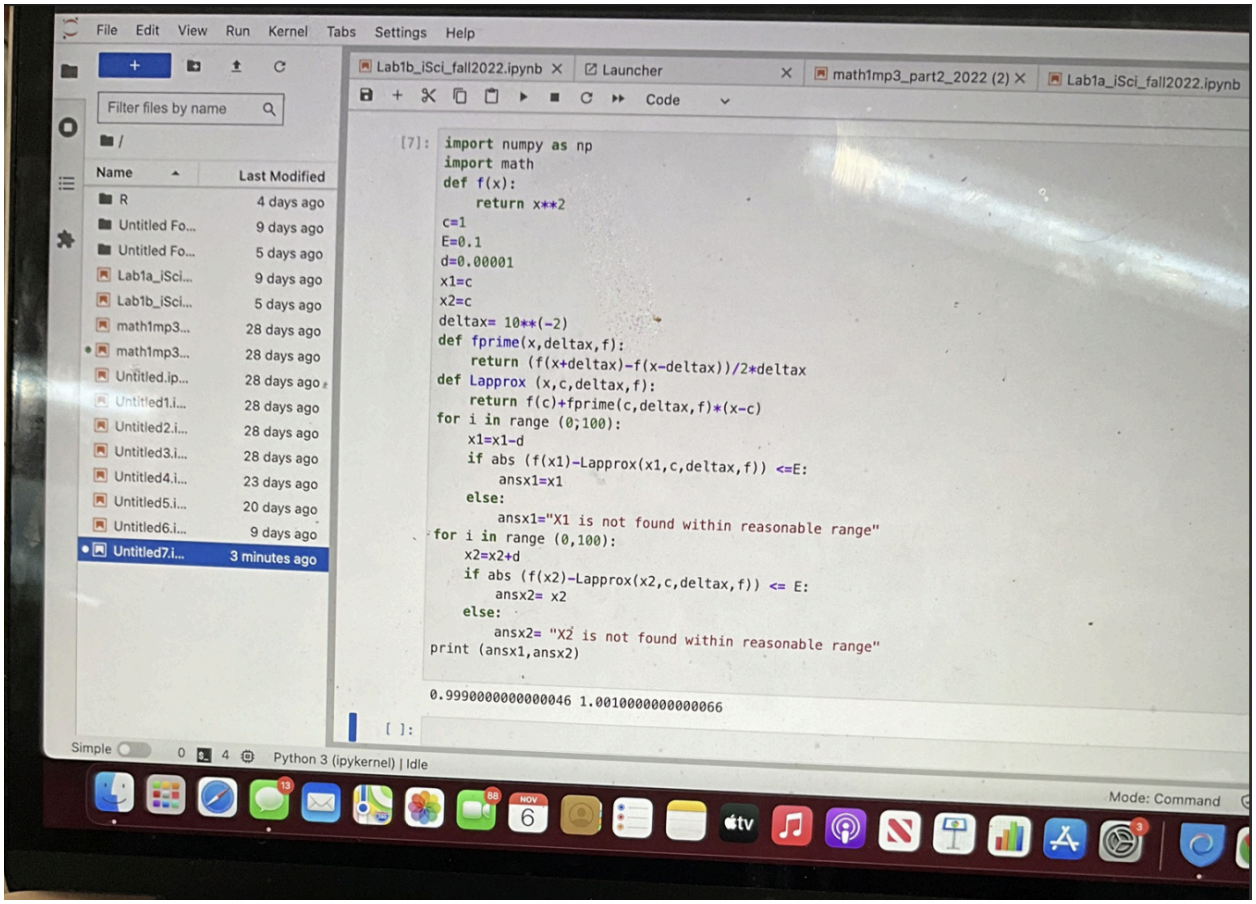
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Lab1b_iSci_fall2022.ipynb
Launcher
math1mp3_part2_2022 (2)
Lab1a_iSci_fall2022.ipynb
Code
[7]:
import numpy as np
import math
def f(x):
return x**2
c=1
E=0.1
d=0.00001
x1=c
x2=c
deltax= 10**(-2)
def fprime(x,deltax,f):
return (f(x+deltax)-f(x-deltax))/2*deltax
def Lapprox (x,c,deltax,f):
return f(c)+fprime(c,deltax,f)*(x-c)
for i in range (0,100):
x1=x1-d
if abs (f(x1)-Lapprox(x1,c,deltax,f)) <=E:
ansx1=x1
else:
ansx1="X1 is not found within reasonable range"
for i in range (0,100):
x2=x2+d
if abs (f(x2)-Lapprox(x2,c,deltax,f)) <= E:
ansx2= x2
else:
ansx2= "X2 is not found within reasonable range"
print (ansx1,ansx2)
0.9990000000000046 1.0010000000000066
[ ]:
Simple
Python 3 (ipykernel) | Idle
Mode: Command

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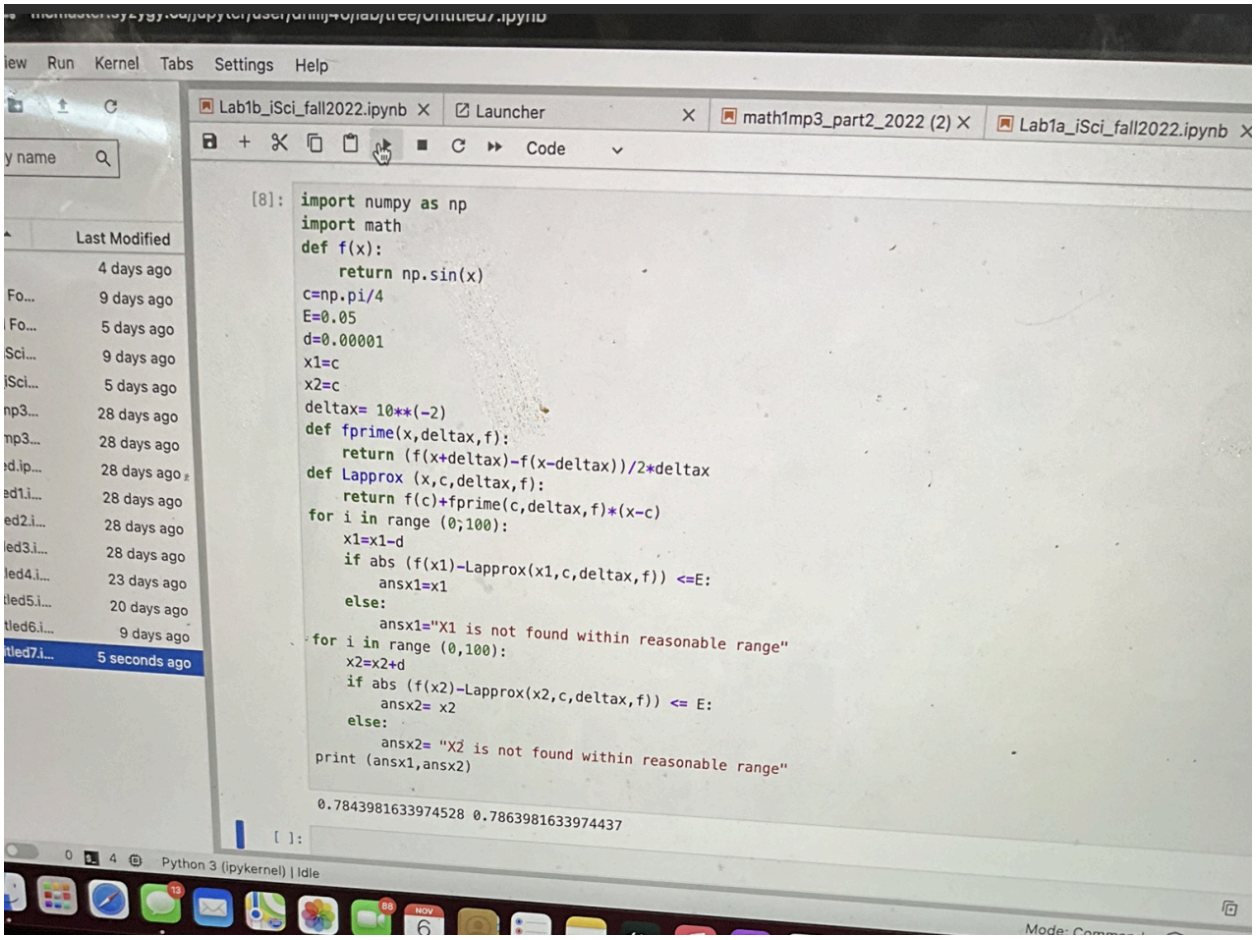
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Lab1b_iSci_fall2022.ipynb
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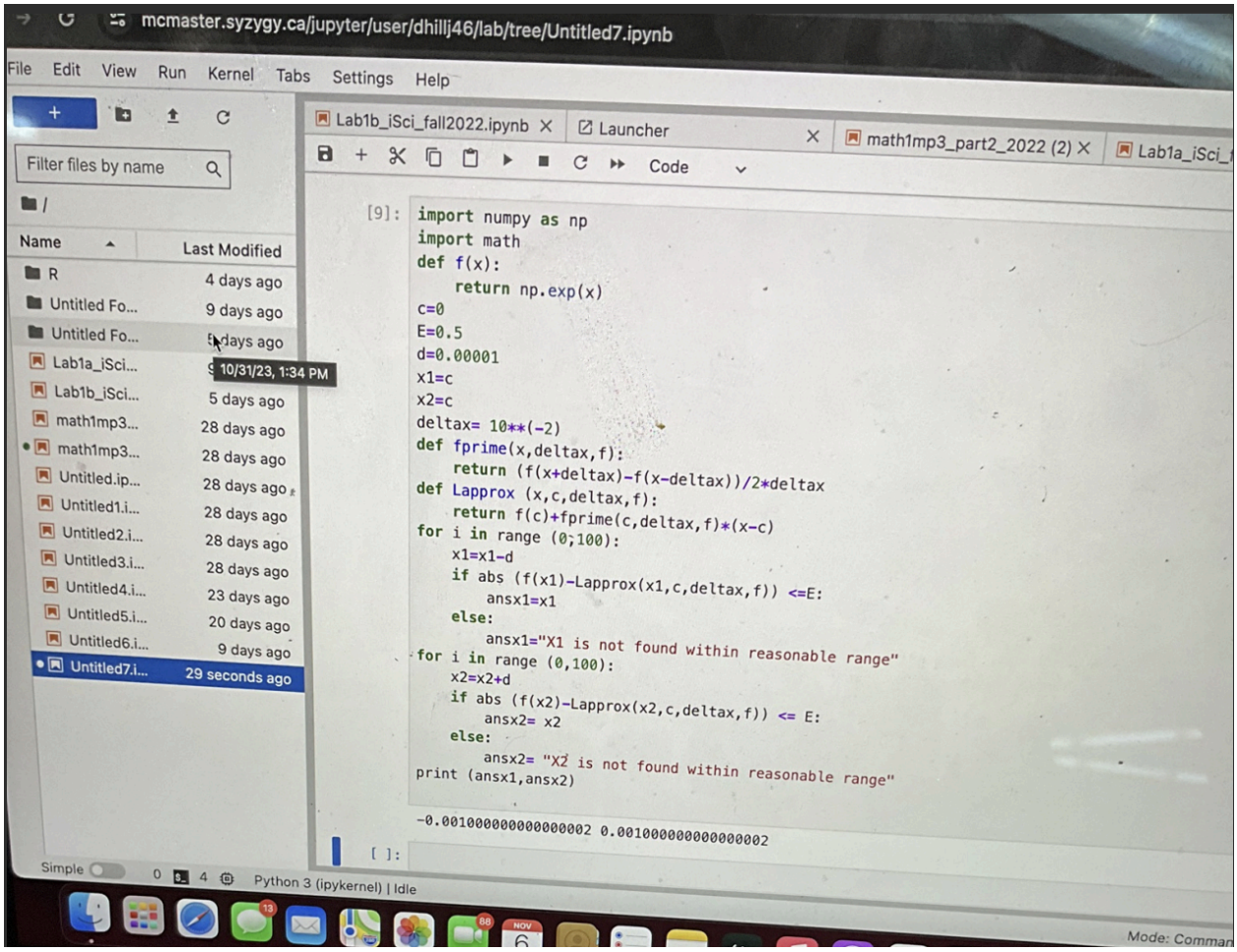
[8]:
import numpy as np
import math
def f(x):
return np.sin(x)
c=np.pi/4
E=0.05
d=0.00001
x1=c
x2=c
deltax= 10**(-2)
def fprime(x,deltax,f):
return (f(x+deltax)-f(x-deltax))/2*deltax
def Lapprox (x,c,deltax,f):
return f(c)+fprime(c,deltax,f)*(x-c)
for i in range (0,100):
x1=x1-d
if abs (f(x1)-Lapprox(x1,c,deltax,f)) <=E:
ansx1=x1
else:
ansx1="X1 is not found within reasonable range"
for i in range (0,100):
x2=x2+d
if abs (f(x2)-Lapprox(x2,c,deltax,f)) <= E:
ansx2= x2
else:
ansx2= "X2 is not found within reasonable range"
print (ansx1,ansx2)
0.7843981633974528 0.7863981633974437
[ ]:
Python 3 (ipykernel) | Idle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Untitled7.i... 29 seconds ago
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Lab1b_iSci_fall2022.ipynb
Launcher
math1mp3_part2_2022 (2)
Code
[9]:
import numpy as np
import math
def f(x):
return np.exp(x)
c=0
E=0.5
d=0.00001
x1=c
x2=c
deltax= 10**(-2)
def fprime(x,deltax,f):
return (f(x+deltax)-f(x-deltax))/2*deltax
def Lapprox (x,c,deltax,f):
return f(c)+fprime(c,deltax,f)*(x-c)
for i in range (0;100):
x1=x1-d
if abs (f(x1)-Lapprox(x1,c,deltax,f)) <=E:
ansx1=x1
else:
ansx1="X1 is not found within reasonable range"
for i in range (0,100):
x2=x2+d
if abs (f(x2)-Lapprox(x2,c,deltax,f)) <= E:
ansx2= x2
else:
ansx2= "X2 is not found within reasonable range"
print (ansx1,ansx2)
-0.001000000000000002 0.001000000000000002
[ ]:
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