from scipy import integrate

from numpy import \*

import math as m

def f1(x):

return 1/sqrt(2\*x + 3)

x1 = [2,2.15,2.30,2.45,2.60,2.75,2.90,3.05,3.2,3.35,3.50]

y1 = []

iv1 = 0

i1 = 0

i1LS = 0

i1RS = 1

h1 = 0.15

sumYR = 0

sumYL = 0

while i1 < len(x1):

y1.append(f1(x1[i1]))

i1 += 1

while i1LS < (len(y1) - 1):

sumYL += y1[i1LS]

i1LS += 1

Left = h1\*sumYL

print('Left', Left)

while i1RS < (len(y1)):

sumYR += y1[i1RS]

i1RS += 1

Right = h1\*sumYR

print('Right ', Right)

x1m = [2.075,2.15,2.225,2.30,2.375,2.45,2.525,2.60,2.675,2.75]

y1m = []

i1m = 0

sumYM = 0

i1M = 0

Middle = 0

i1MS = 0

while i1m < len(x1m):

y1m.append(f1(x1m[i1m]))

i1m += 1

while i1MS < len(y1m):

sumYM += y1m[i1MS]

i1MS += 1

Middle = h1\*sumYM

print('Sered ', Middle)

v,err = integrate.quad(f1,0.8,1.4)

print ('Check rectangle',v)

def f2(x):

return sqrt(x)\*cos(x\*\*2)

h2 = 0.1

x2 = [0.18, 0.28, 0.38, 0.48, 0.58, 0.68, 0.78, 0.88, 0.98]

y2 = []

i2 = 0

Simpson = 0

while i2 < len(x2):

y2.append(f2(x2[i2]))

i2 += 1

Simpson = (h2/3)\*(y2[0] + y2[8]+ 4\*(y2[1] + y2[3] + y2[5] + y2[7]) + 2\*(y2[2] + y2[4] + y2[6]))

print(' ')

print('Simpson', Simpson)

v,err = integrate.quad(f2,0.4,1.2)

print ('Check rectangle',v)

def f3(x):

return 1/sqrt(3\*x\*\*2 - 0.4)

x3 = [3.2,3.24, 3.28, 3.32, 3.36, 3.40, 3.44, 3.48, 3.52, 3.56, 3.60, 3.64, 3.68, 3.72, 3.76, 3.8, 3.84,3.88,3.92, 3.96, 4]

y3 = []

i3 = 0

h3 = 0.04

sumY3 = 0

i3s = 1

while i3 < len(x3):

y3.append(f3(x3[i3]))

i3 += 1

while i3s < len(y3) - 1:

sumY3 += y3[i3s]

i3s += 1

print(' ')

Trapec = h3\*((y3[0] + y3[20])/2 + sumY3)

print('Trapec', Trapec)

v,err = integrate.quad(f3,1.3,2.1)

print ('Check rectangle',v)

